ENGINEERING NEWS-RECORD

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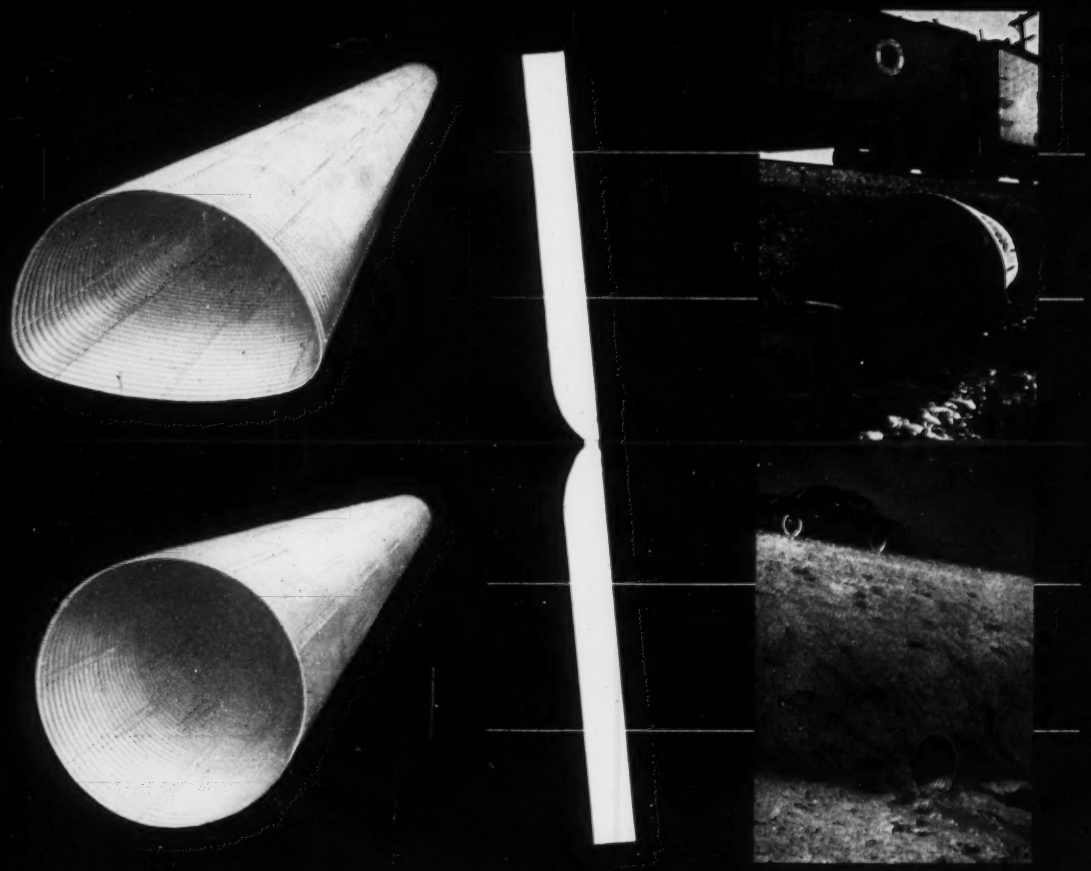

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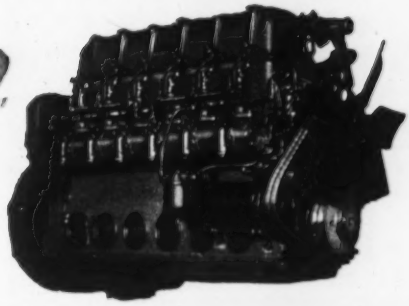

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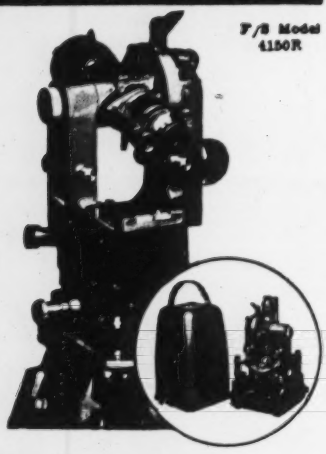

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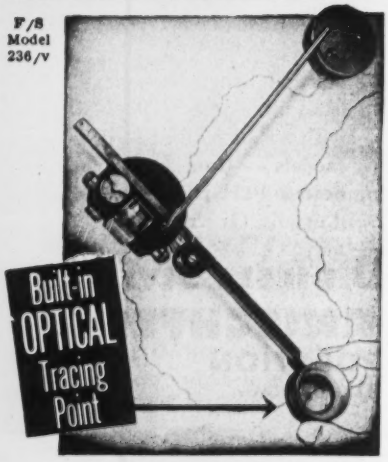

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Robert F. Boger
Publisher

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—says Howard Elliott, Master Mechanic,
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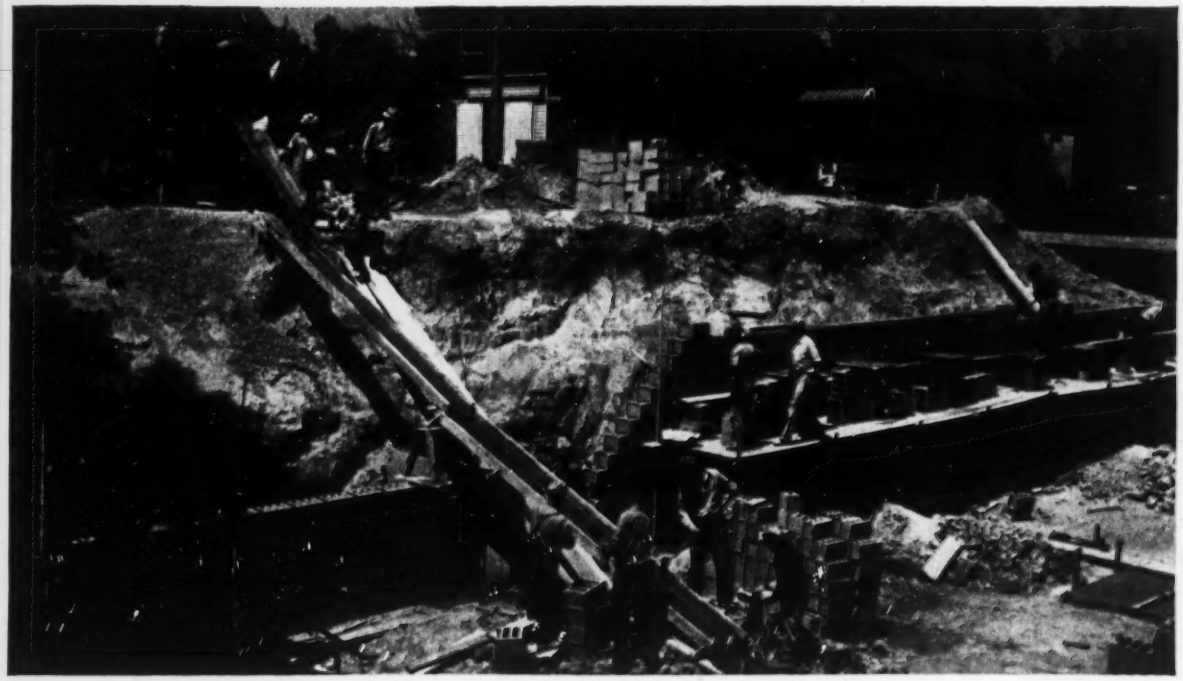

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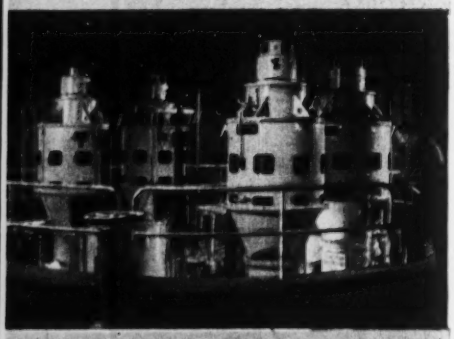
And planning for a still bigger future, Gary recently installed these Allis-Chalmers pumps and motors to create capacity adequate for population *doubling!* With over 123 local industries — including the world's largest complete steel mill, sheet and tin mill, and cement plant — Gary is wise to allow for plenty of future growth.

The Gary-Hobart Water Corporation operation also is unusual in that all city water comes through a Lake Michigan suction tunnel 6 ft in diameter and *three miles long*. When power fails, this moving column of water can cause a surge flooding the main pumping station.

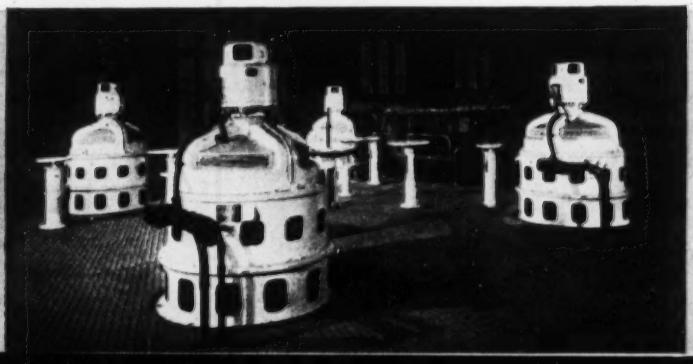
With the original horizontal pumping units, a surge rendered motors inoperative for some time. The four new Allis-Chalmers vertical mixed flow units were made 57 ft long so that the impellers are kept submerged despite "draw down" and yet the 350 hp motors cannot be flooded. Fifteen foot extensions protect the motors for the four high head units.

When *your city* plans expansion or modernization, do as Gary and other leading cities are doing — take advantage of Allis-Chalmers experience in municipal pumping equipment. Ask for Pump Bulletin 08B6146A, containing 24 pages fact-packed with the kind of engineering data you'll want to keep handy. Just call your nearest A-C sales office or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3792



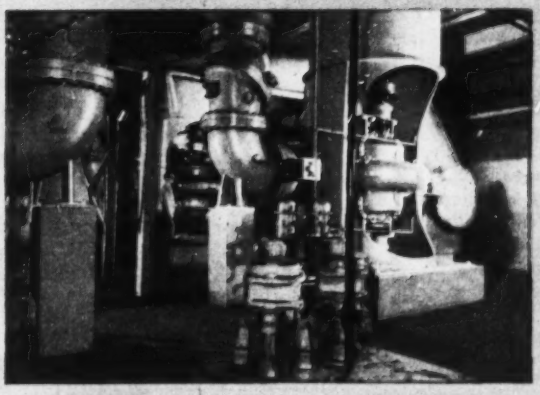
LOW LIFT PUMPS in the 100 ft deep well at tunnel's end are 36 x 24 in. mixed flows, each rated 15,000 gpm against 50 ft head; driven by 350 hp, 720 rpm synchronous motors. Units were made 57 ft long to avoid motor flooding in case of power failure. In 1951, Gary's peak pumpage rate for one hour was 44 M.G.D.



HIGH HEAD PUMPS are 24 x 18 in. centrifugals, each rated 14,000 gpm against 160 ft head; driven by 700 hp, 720 rpm synchronous motors. The high head units pump directly into the mains, operating in series with the mixed flow pumps. Special 15 ft high barrel type supports keep the motors out of flooding danger.

Growing City Expand Water Works

METROPOLITAN GARY, the planned city built on the sand dunes at the lower end of Lake Michigan. Portions of steel mills and lake are seen in the distance.



GREAT FLEXIBILITY at the main pumping station is provided by the header and valving arrangement. Operation can be varied from only one high head unit in service — pumping directly from well to mains and adequate for light loads — to all eight units pumping simultaneously — adequate for Gary population doubling.

GLEN PARK BOOSTER STATION is also exclusively Allis-Chalmers. These two 12 x 12 in. centrifugal pumps are each rated 3200 gpm against 115 ft head; driven by 50 hp, 1160 rpm induction motors. To maintain constant pressure, they are automatically remote-controlled from the water tower.

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READER COMMENT

For the future

SIR: I just finished reading your very complete article, "Construction after the defense boom" (ENR Feb. 19, p. 65). Being a bit hepped on this same subject, I should like to point out two straws in the wind that might have an important effect in the next decade on the construction industry.

Number one is research. This has and will continue to have an important effect on capital expenditures in industry. If you could run down the expenditures made in the last six years by industry, you might find that present and future capital expenditures bear some relation to money spent for research.

The other is the effect of research, particularly in the atomic energy field, and capital expenditures that will follow, not only on the production of energy but also on all types of industrial construction.

J. F. CALLERY
Manager, Publicity Department
Lone Star Cement Corporation
New York, N. Y.

Licenses for teachers?

Sir: I hesitate to disagree with John M. Hayes (ENR Feb. 26, 1953, p. 10), whose years of experience both as a practicing engineer and as a teacher of professional engineering courses certainly qualify him to voice an expert opinion. However, I feel that he has missed the main point at issue which is: Should it be required that college staff members who teach professional engineering courses be licensed?

Mr. Hayes' point that a teacher who has had practical experience is more qualified than one who is unacquainted with conditions outside the "ivory towers" is well taken, but I fail to understand what useful purpose licensing can serve.

The examination required for registration in the State of California is not a test of a man's intelligence but more a test of how much irrelevant information can be crammed in order to pass the test. It seems to me that the object of licensing engineers is purposely to limit the number of men legally qualified to practice engineering and make the field more lucrative for the man with the license. If the examination method is sound then it should be required that licensed engineers periodically retake the examination without prior notice. I feel quite safe in saying that few registered en-

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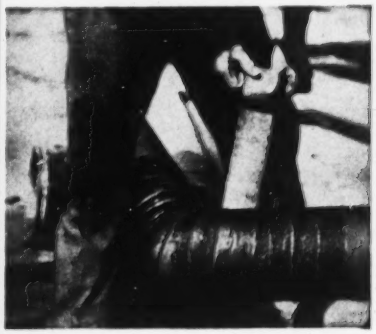

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gineers could pass the examination year after year.

By all means let us try to inject more practical experience into our engineering curriculum but please do not make the mistake of assuming that professional registration is a measure of a man's ability.

WILLIAM H. LONGENECKER, JR.
Coachella, Calif.

Alaskan proposal

SIR: Announcement in your March 26 issue (p. 17) of Canada's refusal to consider Alcoa's proposed diversion of Yukon water to Skagway is not surprising. There is nothing new about the project suggested by Alcoa. This possible power site has been recognized by hydraulic engineers as one of the outstanding ones in North America. But these waters may be employed for power generation eventually at the less favorable sites wholly within Yukon Territory. Therefore, perhaps we should make the concession rather than Canada.

Why not cede to Canada a short corridor from White Pass (Lat. 60°) down to Skagway to encompass the power development and industrial area at tidewater? The width should be sufficient, also, to include the White Pass Railway in order that Yukon may enjoy its rail connection to the sea without the irritations of crossing "foreign" territory.

That small strip of ground is useful to the U. S. only as a bottleneck on access to the upper Yukon. Under any kind of a good neighbor policy worthy of the name, control should be transferred to Canada.

FRANK E. BONNER
Consulting Engineer
San Francisco, Calif.

BLS on enrollment

SIR: My attention has been called to an article in your Feb. 26 issue (p. 26) which states that "Most educators and many informed observers are inclined to put a major portion of the blame for falling enrollments in engineering on an ill-advised announcement in 1950 by the Bureau of Labor Statistics". I believe it is no longer true that informed observers blame falling enrollments on our 1950 report.

The fact is that enrollments began to fall several years before our report was issued. As veterans entered the GI vocational rehabilitation and education program, enrollments in college freshman classes hit a peak in 1946; they dropped thereafter as the wave of veterans subsided. Enrollments in

INSIDE THE *Arctic Circle*

Sydvaranger, A/S is moving 25 million yards of rock with 12 LeTourneau 40-ton rubber-tired haul units

At Kirkenes, Norway, 215 miles north of the Arctic Circle, approximately 25 million yards of rock are to be removed to uncover magnetite ore. Deepest excavation in this vast, open-pit mine will go to 350 feet below the ground surface. Production goal of 2.3 million tons of ore annually calls for removal of 12,000 tons of rock overburden and iron ore every 24 hours, year-around, in temperatures which frequently reach 31° below zero.

To achieve quickly and maintain this heavy production, Sydvaranger, A/S, of Oslo, assigned hauling to LeTourneau rubber-tired Tournarockers. Carrying approximately 40 tons of rock each trip, these giant, rear-dump haulers haul from shovel to crushing plant at high speeds, dumping their loads at a touch of an electric switch. Sydvaranger originally brought in 6 of these modern hauling units; finding their performance so dependable and satisfactory, they added 6 more.

The enterprising Norwegian firm has also modernized pit and haul road maintenance with 2 LeTourneau high-speed Tournadozers. These mobile Bulldozers, rolling on giant tires, travel at speeds up to 19 m.p.h. They build and maintain haul roads from mine to crushing plant, and clean up around shovels in the pit.

To you, this modern LeTourneau equipment can also mean lower costs and increased production on your mining and other dirtmoving operations. See your nearest LeTourneau Distributor for job performance information on projects like yours where high-speed Tournadozers, rear-dump Tournarockers, bottom-dump Tournahoppers, Scraper-dirt Tournapulls, loghauling Tournaskidders, Tournacranes, etc., are at work.

High-speed rubber-tired Tournadozers are used for shovel clean-up and haul-road maintenance.

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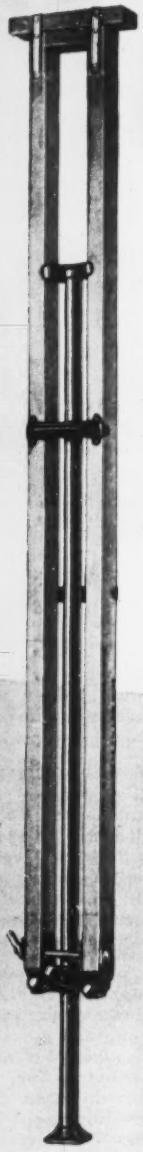


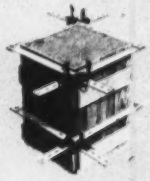
Contractors prefer Rooshors because . . .

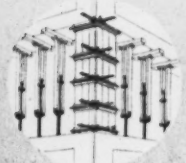
Rooshors save time, material and labor . . . so naturally they cut costs on all your shoring operations. They are easily set — instantly and accurately adjusted to any fraction of an inch by *only one* man. There are no loose pins and no screw adjustments to become clogged. They have longer adjustment in their range of three sizes: 8 ft. to 14 ft.; 7 ft. to 13 ft.; and 5 ft. to 9 ft. — higher stories are shored with Roos Extension Shores. Rooshors have been used by contractors from coast to coast and in many foreign countries for over 35 years.

Rooshors and Roos Column Clamps are available for rental with purchase option from Warehouse stocks in principal cities. New equipment is for sale FOB factory.

ROOS COLUMN CLAMPS

Roos Column Clamps, consisting of two identical hinged units, eliminate lost time and motion in fitting and adjusting . . . there is no wrong way to put them on. They have no loose parts to cause needless delays and a hammer is the only tool needed.





BAKER-ROOS, INC.
602 WEST McCARTY STREET
INDIANAPOLIS 6, INDIANA

WRITE TODAY FOR BULLETIN — 353

READER COMMENT

engineering schools and the resulting graduating classes were as follows:

Freshmen (fall term)	Graduates
(1946) 93,000	(1950) 52,000
(1947) 64,000	(1951) 42,000
(1948) 53,000	(1952) 30,000
(1949) 42,000	(1953) 23,000*
(1950) 34,000	(1954) 19,000*
(1951) 39,000	(1955) 22,000*
(1952) 52,000	(1956) 29,000*

* Estimated

As you can see, a report issued in 1950 could not have caused the major part of the decline in freshman enrollments.

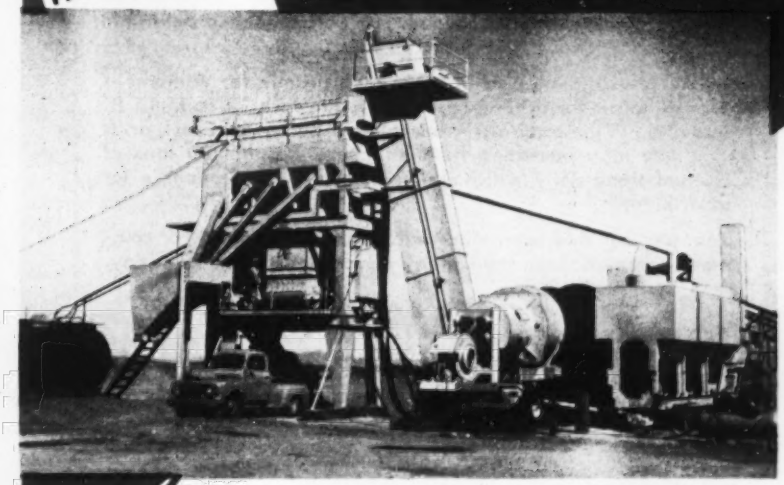
That informed observers were aware of the cause of the decline is indicated in a report presented before the national convention of the American Society for Engineering Education in June, 1950. This report pointed out that veterans caused the high postwar enrollments, and predicted, on the basis of prewar trends in enrollments, that when the flow of veterans into freshman engineering classes had slowed to a trickle—in the fall of 1950—there would be 36,000 engineering freshmen. The actual number was almost that—34,000. Thus the drop from 93,000 engineering freshmen in 1946 to 34,000 in 1950 was about what would have been expected on the basis of prewar trends and did not result from our report or any reports to the same effect which were issued by others. Actually, there were similar substantial declines in male graduations in other scientific and technical fields from 1950 to 1952 even though no "unfavorable" publicity had been issued concerning these fields.

This bureau has been working continuously with the engineering societies and organizations since 1946 in studying the manpower situation in the profession and this cooperation continues to the present time. Our 1950 report was prepared with the help of the societies and many leading engineers, and we are convinced that it represented the best judgment of the profession, as well as our own best judgment, at that time. It appeared that under peacetime conditions industry would be unlikely to employ in engineering jobs as many men as were expected to graduate from engineering schools in 1950-52, even though the profession was growing rapidly. The expected surplus of graduates over job openings in the 1950-1952 period was, of course, wiped out by the outbreak of war in Korea and the subsequent mobilization program

(Continued on page 15)

BIGGEST NEWS! IN THE ASPHALT PAVING INDUSTRY

MADSEN *Announces!*



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Portable 4000-lb. BATCH CAPACITY ASPHALT PLANT

With a background of 39 years in building asphalt plants MADSEN now gives the industry the new MADSEN Model 481 . . . a batch-type plant which we believe excels all others in capacity, desirable features, superior construction and design.

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Batch-type asphalt plants meet the exacting requirements of today's specifications and the MADSEN Model 481 gives you more desirable features than any other plant of this type. Here are a few of the exclusive MADSEN features:

NEW **Sectional Mixer Liners** . . . externally removable (patent applied for).

NEW **Triple Discharge Bin Gates** . . . withdraws material from bin uniformly, prevents segregation, fills weigh-box in a level manner (patent applied for).

NEW **Roller-Mounted Weigh-Box** . . . rolls out of the way for mixer accessibility.

NEW **Portable Design** . . . built-in gooseneck, fifth wheel plate, king pin and rear axle mounting brackets.

NEW **8' 2" Wide** . . . legal width and height crane-erecting box units.

NEW **Mixer Operator Station on End of Plant** . . . provides better view . . . cleaner, out of the way . . . away from fumes or heat.

NEW **Enclosed Gear Box Drive to Pug Mill** . . . . . V-belt from motor or engine to pulley on gear box with pinion to Pug Mill Mixer.

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NEW **Three Sizes of Screens Optional** . . . 42" x 12', 48" x 12' double-deck, or 48" x 14' Symons 2½-deck vibrating screens.

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NEW **Accent on Safety** . . . provided by imp platforms and railings for safer maint

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After using a Schramm 210-c.f.m. Air Compressor for three years without a single repair to the compressor, a letter from Cyril B. Williams of the Williams Rock Company, Clinton, Mo., reported the purchase of another Schramm 210, saying that, "where plenty of air is needed," he recommended Schramm Compressors, "as I think they are tops!"

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You, too, will find Schramm Air Compressors "Tops." For complete information on their many advantages, write us today.

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The Compressor People

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with its tremendous additional need for engineers. In the fall of 1950 we issued a release pointing out the changed situation resulting from the defense program. Your statement that "protests by most engineering societies and other groups forced the withdrawal of the misleading information" is inaccurate in its implication of unwillingness on our part or conflict with the societies.

The shortage of engineers we now face is a serious one. A sound program of action requires some understanding of the real causes of the present situation. The Bureau of Labor Statistics intends to make whatever contribution it can to this understanding.

EWAN CLAGUE
Commissioner of Labor Statistics
Washington, D. C.

CALENDAR

Concrete Reinforcing Steel Institute, annual meeting, the Carolina Hotel, Pinehurst, N. C., Apr. 27-May 2.

Pacific N. W. Conference, ASCE, Seattle, Wash., Apr. 30-May 2.

American Water Works Association, annual meeting, Municipal Auditorium, Grand Rapids, Mich., May 10-15.

Conference on instrumentation in water, sewage and industrial waste treatment, Manhattan College, N. Y. City, May 14.

Annual Northwest Traffic Engineering Conference and Western section of Institute of Traffic Engineers, More Hall, University of Washington, Seattle, May 21-22.

Society of Fire Protection Engineers, Palmer House, Chicago, May 21.

Society for Experimental Stress Analysis, Hotel Schroeder, Milwaukee, Wis., May 20-22.

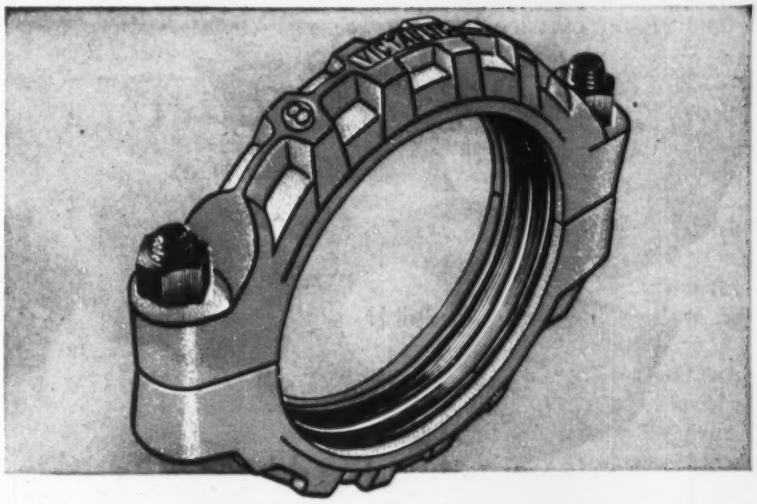
American Society of Civil Engineers, spring meeting, Casablanca Hotel, Miami Beach, Fla., June 15-19.

National Society of Professional Engineers, Sheraton Beach Hotel, Daytona Beach, Fla., June 18-20.

American Society for Engineering Education, annual meeting, University of Florida, Gainesville, June 22-26.

Conference on modern highways, Massachusetts Institute of Technology, Cambridge, Mass., June 23-25.

Summer program in Advanced Strength of Materials, M.I.T., Cambridge, Mass., July 6-17.



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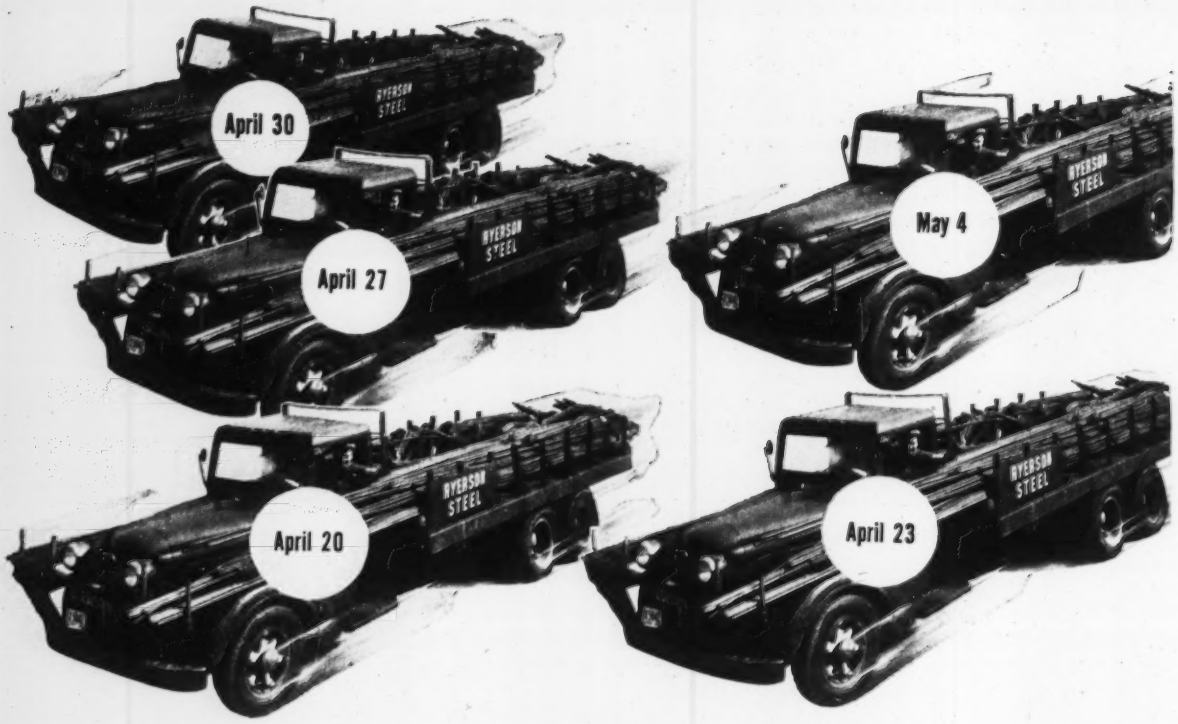

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There are no delays, no idle crews—nor is there inconvenient piling-up of materials on the site. That's because Ryerson deliveries are flexible—can be quickly adjusted for unforeseen construction delays, or stepped up when the job jumps ahead of schedule.

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THE CONSTRUCTION WEEK

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• **All friends now?**—Those acid exchanges that have been clouding the California air over water rights in the Santa Margarita River near San Diego may be ending in a friendly fashion.

Last week, U.S. District Judge Leon R. Yankwich postponed to July 7 the trial of the suit of the U.S. government against private groups who also claim the water; he commented that the contest seems to be approaching a friendly end.

The court fuss started almost exactly a year ago (ENR May 8, 1952, p. 26) when the Navy—seeking to clear water rights for its huge Camp Pendleton Marine Base (on the site of the old Rancho Santa Margarita)—claimed prior rights to river water, and threatened to sue thousands of individual water users in the surrounding towns and countryside.

Water users fought back—with publicity and in court. California congressmen sought to get a bill through Congress to authorize construction of a $23-million dam to supply the base—but the bill died in the Senate; the congressmen charged (ENR Nov. 6, 1952, p. 19) that the Navy was using its funds illegally in prosecuting the suit; lengthy articles appeared in national magazines.

Judge Yankwich's hope of friendship seemed to have solid support. From Washington last week came reports that the government, California congressmen and local residents have reached an agreement to study the available water and work out a new method of sharing it—possibly including the once-proposed dam.

• **Fly ash is in**—It wasn't done without political overtones (with mayoralty election due in November) but New York City has approved use of fly ash in concrete.

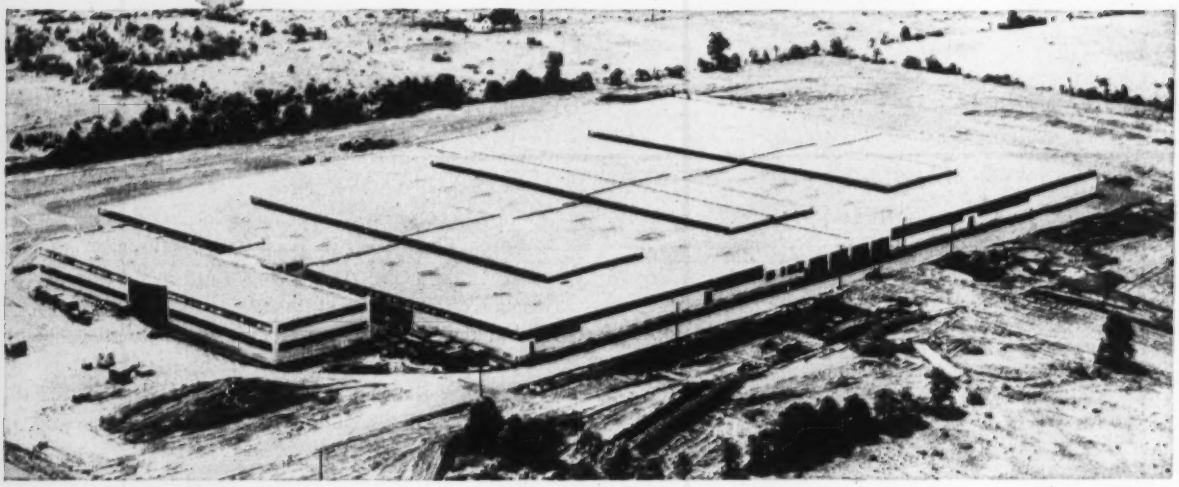
Among accusations of undue influence by Consolidated Edison (the city's biggest fly-ash producer) and vote-seeking (by both sides) city councilmen approved a local law permitting fly ash in controlled concrete.

Under terms of a bill submitted early in 1952 (ENR Oct. 16, 1952, p. 26) fly ash would be permissible as an aggregate in amounts up to 20% of Portland cement concrete, in controlled concrete that must meet full 28-day design strengths.

• **Economics—Not danger?**—The Atomic Energy Commission—which reaped an unexpected crop of criticism for its jitters over proposed construction of a high-level dam at Priest Rapids (ENR Feb. 26, p. 88)—took a new tack: It would not oppose plans of the Grant County Public Utility District to build two low dams across the river—and it estimated cost of the two low dams at $358 million, compared to the Army-Engineer-built high dam at $412 million.

AEC had objected to the Army's plan on the ground originally that the high dam, near AEC's Hanford works, might threaten the works with destruction if it were destroyed or breached in a bombing attack.

A VERITABLE Bulldog OF A FLOOR!



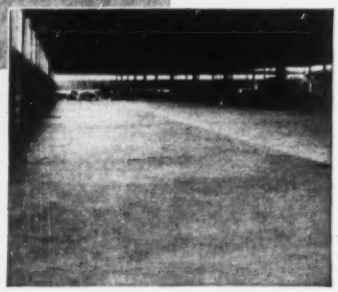
'INCOR' CUTS CONCRETING COSTS 35% ON HEAVY-DUTY FLOOR FOR MACK TRUCK'S 8½-ACRE NEW JERSEY PARTS WAREHOUSE

MACK TRUCK INC. PARTS DIVISION
Bridgewater Township, N. J.

Contractor: D. O. EVANS, Hillside, N.J.

Architect: HERMAN F. KUZEL
Dunellen, N. J.

Ready-Mix 'Incor' Concrete:
COMMONWEALTH CONCRETE CO.
Bound Brook, N. J.



● The more popular the truck, the greater the need for good service facilities, supported by a reservoir of parts, such as this huge, new MACK TRUCK Parts Warehouse, near Somerville, N.J.

Mack builds stamina into its trucks, and it engineers this quality into buildings, too. Witness the use of 'INCOR' 24-HOUR CEMENT for heavy-duty floors in this 8½-acre warehouse.

Easy-working 'Incor' mixes cut placing and finishing costs. Example: The Ready-Mix Operator on this job was unable to supply 'Incor' for several days, and *D. O. EVANS, Hillside, N.J., General Contractor, says that, on switching back to 'Incor', his costs dropped 35%.*

Above all, 'Incor' helps assure a stronger, longer-lasting floor, by curing *thoroughly* in the short time concrete can be kept wet—and thorough curing is vital to wear-resistance.

With 1-day curing, 'Incor' produces at 1 year 40% higher strengths than even Lone Star Cement concrete—and 'Incor' cured 1 day has less absorption than ordinary portland cement concrete cured 7 days.

For extra years of service—for a veritable bulldog of floors—use 'Incor'*, America's FIRST high early strength portland cement.

*Reg. U. S. Pat. Off.

LONE STAR CEMENTS COVER
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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 129,000,000 SACKS ANNUAL CAPACITY

Opposition to cutbacks in government activities affecting construction is developing. It won't change any of the economy votes being dealt out by the House Appropriations Committee. But money bills for fiscal 1954 have a long route through Congress, and before they clear finally the opposition will make itself felt.

•

There's no single organized bloc, but pressure is building up from congressmen whose districts and states would lose funds—and from lobbyists for airports, dams, public housing, and the like. The fighting is cutting across party lines.

That's why the moves are worth watching. The opposition benefits from slimness of Republican majorities in both houses. The administration needs Democratic help to put its program across, and it's losing support already from even conservative Democrats.

•

Take slashes in reclamation funds, for example. Secretary McKay's cut of Truman's budget was made even deeper by the House Appropriations Committee (see page 21). Democrats are almost solidly against such huge reduction—and are counting on effective help from such key Republicans as Colorado's Senator Millikin, who leads westerners pressing for $1.5 billion in new starts on the upper Colorado.

•

Proponents of public housing are sounding off. The House Appropriations Committee cut out any new projects—against the administration's request for 35,000 units. Urban Democrats and leading Republicans, such as Taft of Ohio and Ives of New York are protesting.

There's a battle over extending rent controls to Oct. 1. Eisenhower favors this "to give state legislatures a chance to set up controls of their own." But Republican chairman Jess Wolcott of the House Banking Committee wants controls to end next Thursday. Only exception he will okay is controls in critical defense areas.

•

Planned increases in interest rates are heading for a fight—even inside the administration—in the wake of the Treasury's success with its experimental offer of 30-year, 3¼% bonds.

The new issue was over-subscribed four times the first day indicating to the Treasury men they had certainly made the offer attractive—which they had hoped to do by making the interest rate high.

Now they wonder: Have they under-estimated the supply of long-term money? Which is another way of asking: Did they put the interest rate higher than necessary? The quick over-subscription strengthens the argument that money may be cheaper by the end of the year because of slackening demand.

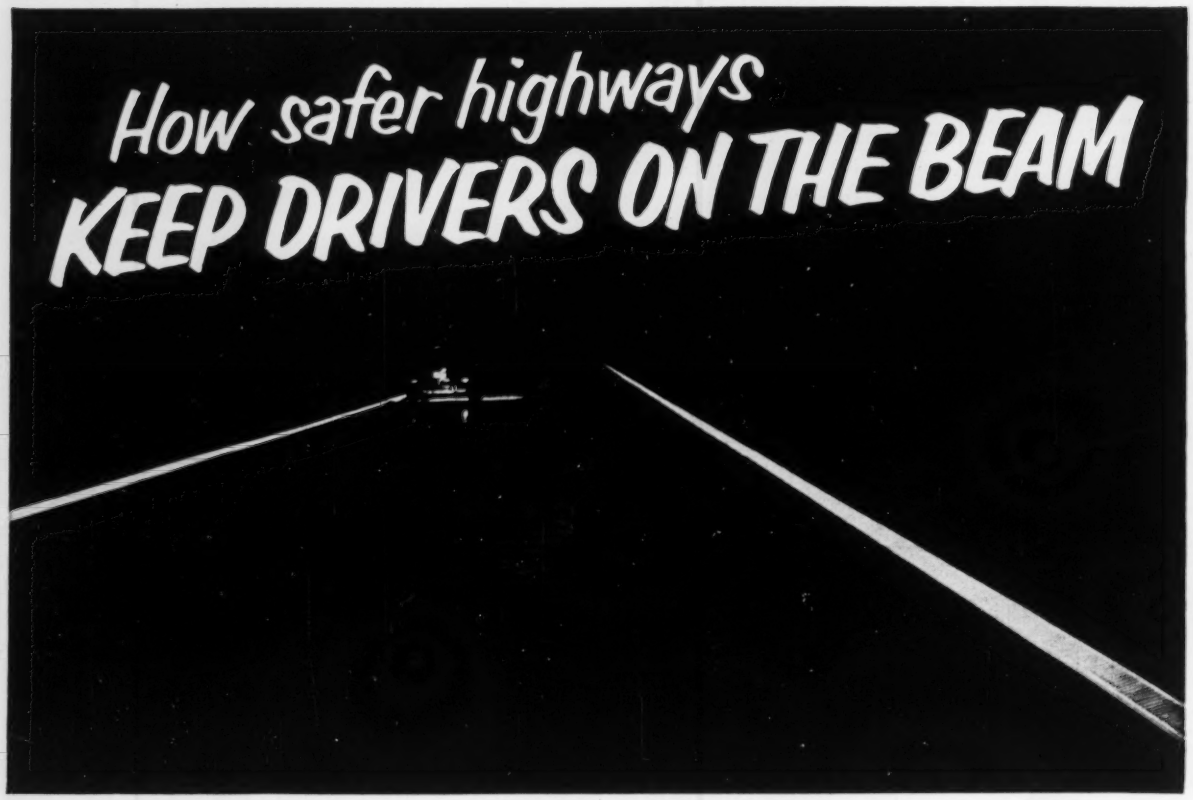
•

The situation affects the fight over FHA and GI housing interest rates. Odds the first of this week still favored a step-up—but they also seemed to favor an increase that won't be more than the market requires.

•

Wage rates fixed by Labor Dept. are under fire again. This time it's Civil Aeronautics Administration officials who are complaining of methods used to fix rates on highway projects under Davis-Bacon Act.

The Department ruling pegged highway wages up to 40 cents higher than the state pays for the same work on a $50,000 bridge project leading to the Hazard, Ky., airport.



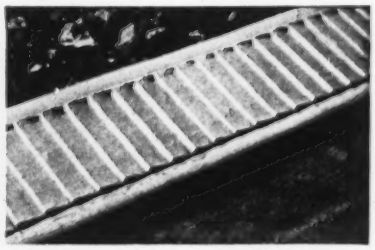
with WHITE CONCRETE REFLECTING CURB made with Atlas White Duraplastic*

Like a radio beacon to an airplane, a beam of reflected light along this highway shows drivers the way to safety in darkness and rain—as well as by day. This round-the-clock safety feature is found on the many fine highways which now use Concrete Reflecting Curb made with Atlas White Cement.

Reflecting Curb is clearly visible by day because the pure white of Atlas White Cement contrasts with the darker pavement and shoulders.

After dark, thousands of white corrugations in the curb take over. They're scientifically angled to bounce headlight rays *back to* the driver—instead of wasting the light in space. Thus a beam of reflected light along the curb clearly outlines the road ahead. When wet, the corrugated curb reflects even more light, giving extra protection on rainy nights when good visibility is needed most.

Why not plan now to make the safety of Concrete Reflecting Curb part of your next highway project? If you would like further information, write Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.



CLOSE-UP OF CURB—Placement is simple and fast. One method is to place a mortar mix of Atlas White Duraplastic air-entraining cement on a grey cement base, screed to 1-inch thickness and score with a hand tool. Contractors prefer Duraplastic cement because its air-entrainment feature makes the mix more workable, more plastic; makes placement and scoring easy.

*"*Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.*

ATLAS® **WHITE CEMENT**
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ENR-RM-74R

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

Drastic cutback proposed on federal projects

The economy knife this week sliced deeply into federal construction funds for the next fiscal year. The Budget Bureau sent to Congress its revision of plans for the Army Corps of Engineers for next year that totaled $177.5 million in construction cuts.

The House Appropriations Committee reduced funds for the Department of Interior by one-third with $48.8 million of it in construction.

Overall, the administration slashed $190.2 million from Truman's Army Engineer Corps budget. Truman had requested $661.5 million; the Budget Bureau revised that to $471.2 million.

• **Missouri Basin cuts**—For construction, maintenance and other costs for flood control on the Mississippi and its tributaries, the new budget provides $52.5 million, compared with $62.7 million in the Truman budget.

For the Missouri Basin, cuts were as follows: Gavins Point Dam, in Nebraska and South Dakota, from an original $17.8 million to $12.1 million; Ft. Randall Dam on the Missouri River, from $22.7 million to $14.7 million; Garrison Dam, in North Dakota, from $39 million to $31 million.

Money for three dams was eliminated entirely—Oahe Dam in South Dakota, in the Truman budget for $14.8 million; Tuttle Creek in Kansas, $15.8 million; and Toronto Dam in the Arkansas Basin, $1.9 million.

Thus, the administration cut requests for these Missouri River flood control dams by almost 50%—Truman budget asked $112 million, the revised budget request totals about $54 million.

• **Pacific Northwest projects**—Nearly $31 million was cut from Pacific Northwest power projects. The revised budget contains no funds for Ice Harbor lock dam on the lower Snake River in Washington or for Detroit Dam in Oregon.

It is understood that the Army Engineers have enough money to complete the Detroit project without the $1.2 million which had been asked. The Truman budget contained $4.9 million for Ice Harbor.

Biggest slash was received by The Dalles lock and dam on the Columbia which was cut back from $58.4 million to $37.4 million.

Altogether $120.6 million was earmarked for Pacific Northwest power projects, including Albeni Falls in Idaho, compared to $151.4 million requested for the same projects in the Truman budget.

The revised budget eliminates $2 million from the $4.8 million Truman recommended for flood control and navigation on the Arkansas River. It also dropped entirely any work on the Table Rock Reservoir in Missouri, for which Truman had asked $10.8 million.

• **Interior Department revisions**—Hit hardest in Interior appropriations were: Bureau of Reclamation—$90 million cut from an original budget request of $231 million; Bonneville Power Administration—$14 million from $63 million; Southeastern Power Administration—$7 million from $8.4 million; and Southwestern Power Administration—$2 million from $9 million.

The House Appropriations Subcommittee took a sharply revised program of the Budget Bureau for Interior Dept. and trimmed it further. The Budget Bureau had cut out three projects that had been planned for starting after July 1, and stopped construction of three projects.

It was recommended that construction be stopped on the Missouri River diversion dam in Montana downstream from Fort Peck Dam, which was started in fiscal 1953 and for which the Truman budget requested $5.2 billion for 1954.

Suspension of work at two Kansas River Basin projects—Webster and Kirwin Dams—also was recommended. The Truman budget had requested $6 million for continuing work on Webster, which was started in fiscal 1953, and $8.3 million for Kirwin, which was begun in 1952.

New starts were canceled on these three hydroelectric projects: American Falls in Idaho, $853,000; Roza in Washington, $881,000; and Deer Creek in Utah, $380,000. In addition, several proposed transmission lines and substations were ruled out.

Although the Interior economies reflect the general trend of Administration and congressional thinking, they do not give the full construction picture for the next fiscal year. One reason is that funds carried over from the present fiscal year probably will be used for construction next year.

Bureau of Reclamation, for instance, has a $16-million "carryover" which is added to both the Eisenhower budget figures and the amount recommended by the House subcommittee. Bonneville Power Administration "carryover" will add some $3 million to the revised budget figures. A smaller "carryover" is also available for use by Southwestern Power Administration.

• **Senate may revise upward**—The big question mark on the Interior funds for the next fiscal year is the attitude of the Senate. In the past, the upper House usually could be counted on to raise the House-approved figures. Many observers believe the same is true this year. They expect that the final appropriations will approximate administration-requested funds.

Changes in federal highway policies to await administration's studies

The administration last week assured congressmen that it has no preconceived plans for remodeling the federal highway program and will make no recommendations for changes until proposed studies are completed and digested.

Two morning sessions with federal officials set the stage for the long schedule of hearings planned by the House Committee on Roads. Several things quickly became clear:

• The new Commissioner of Public Roads, Francis V. du Pont, is the top spokesman on highway matters for the Commerce Department and the administration.

• No changes in taxation or federal-aid policy for highways will be recommended by the Commerce Department until the administration makes broad-scale decisions following a report next year from President Eisenhower's federal-state fiscal relations study.

• Du Pont will wait until an intensive review of the Bureau of Public Roads is completed before he makes any changes in organization or operating methods.

• Until Congress directs otherwise,

ENR photo by Compton

FRANCIS V. DU PONT, new Federal Commissioner of Public Roads, outlines administration approach to federal highway financing problems at outset of hearings being conducted by House Subcommittee on Roads.

the bureau will continue to carry out the present federal-aid program, without change in its functions or operations.

• **Governors to be heard**—With the decks cleared by these statements, the committee was ready to hear the comments of the state governors. This week Gov. Alfred E. Driscoll of New Jersey was the first to accept. He is one of a group of governors who want the federal government to turn over all gasoline taxation and control of highway funds to the states, with minimum supervision from Washington.

That proposal is the crux of the present hearings, for which chairman Harry McGregor and his subcommittee have drawn up a 14-item agenda.

At last week's hearings, Robert B. Murray, Undersecretary for Transportation, made only a brief appearance to say that Commerce Department plans no change in the function of BPR.

From there on, du Pont did the talking. He will wait until his BPR study is completed before he makes any specific comment on policy matters relating to the federal role in the highway program.

• **Discusses toll roads**—Until a suitable and equitable highway program has been decided upon, "we shall carry on the bureau's activities along the line they are now operating," du Pont declared.

On toll roads, du Pont pointed out that they are economically feasible only for selected stretches of highway connecting densely populated areas.

Chairman McGregor wanted a clear statement that the administration places no limit on appropriations by Congress for roads. Du Pont agreed.

On the problem of vehicle loads, du Pont gave his opinion that Congress could accelerate solution of the economic size and weight of vehicles, not by threats, but by hints that if industry and state highway people did not arrive at an answer Congress might act. Regulation, he said, could be enforced by denying federal aid.

To help the highways that most need improvement, particularly on the interstate system, du Pont suggested that the formula for apportioning federal aid to the states should give more weight to population.

Asphalt case opens

Charging that "substantially all the findings of the referee were based upon inferences," the Ohio Turnpike commission this week filed briefs with the Ohio Supreme Court asking reversal of an appellate court order requiring alternative bids on both asphalt and Portland cement on the 241-mi super-highway (ENR April 2, p. 21).

The brief charged five grounds of error in interpretation of the turnpike act. It said there was no provision in the Ohio general code requiring advertisement for bids for different types of construction and nothing in the law to prohibit the commission from electing the type of construction it prefers, even before advertising for bids.

The commission charged that the appellate court was in error in finding that Portland cement and asphalt are equal, contending the two types of construction are comparable but not necessarily equal in quality and usability.

Counsel for the asphalt interests who brought the suit against the turnpike commission will file briefs later in the month. The Supreme Court is expected to rule next month.

PHA cut asked

House committee wants Fannie Mae to dispose of $1 billion mortgages

The House Appropriations Committee gave federal housing activities the deepest slash in years last week. As in times past, it will be up to the Senate to rescue the programs.

The committee, which starts the money bills through the congressional process:

• Voted to prevent the Public Housing Administration from making any new housing starts after the appropriations bill becomes law.

• Recommended that Fannie Mae dispose of at least $1 billion worth of housing mortgages, even if it has to be done at a discount. This is bound to tighten the mortgage market (see page 104).

The flat ban on new public housing starts won't stand, the experts agree, but public housing advocates admit they couldn't start from a worse bargaining position. This year it will be up to the Senate to swing its weight again on public housing if the recommendation of the Eisenhower administration—35,000 starts—is to be met.

• **Says projects going begging**—The House committee gave as justification for its drastic action its opinion that the housing program "is not in accord with the program for economy and a balanced budget." It said it also had found instances of low-cost projects going begging for tenants.

• **Unloading proposals**—Phillips said the committee had consulted with financial agencies in the government who thought that between $750 million and $1,250 million of these mortgages could be sold the coming fiscal year.

The committee also claimed a savings of $271 million for next year by instructing PHA to refund bonds of local housing authorities that it now holds.

In other actions on the Housing and Home Finance Agency budget requests, the committee:

• Allowed $20 million for slum clearance and urban redevelopment.

• Authorized $411,250 for housing loan programs—Alaskan housing, prefab housing, and housing for educational institutions and $112,500 for defense community facilities and services.

• Cut construction request for the National Advisory Committee on Aeronautics from $14.6 million for $7,239,000, by cutting back three low-priority projects.

(ENR photos by Compton)

SEN. WILLIAM LANGER, right, chairman of Senate Judiciary Committee and also of subcommittee in charge of bid shopping hearings confers with Sen. Harley M. Kilgore. Langer was co-sponsor of bid shopping legislation introduced by Kilgore.

Bid shopping nearer?

Advocates gain as Senate-House committees end hearings

Specialty contractors scored a small gain last week in their 1953 campaign to push enactment of the so-called bid shopping bill.

Judiciary subcommittees of the Senate and House in all-day joint session cleaned up the hearings for this year on a half-dozen identical measures so far introduced in Congress.

Things moved much more slowly last year, when the first effort was made to pass such a law. The attempt at that time centered on the much-publicized Kilgore Bill, S. 2907 of the 82nd Congress. The Senate Judiciary Committee reported the bill without recommendation and it died when Congress adjourned.

• **Principal requirements**—Main provisions of this year's bills are similar to last year's. They would require:

• Naming of mechanical specialty contractors and their subcontract bids in the general contractor's bid for any federal construction job of more than $25,000.

• On cost-plus-a-fixed-fee construction, limiting the general contractor to only those types of mechanical specialty work which his organization is qualified to handle; all other types must be let to subcontractors.

• On lump-sum contracts, enabling the general contractor to perform any kind of specialty work, provided he did it at the same prices listed in sub-bids submitted by the general contractor at the request of the contracting agency.

Specialty contractors see these and other provisions in the bill as putting a stop to bid peddling and bid shopping after the award of a federal contract. They want a federal law as an example for state and local legislation and as a starter toward possible broader coverage later.

• **Electrical group leads fight**—General contractors and government construc-

SPEARHEADING the specialty contractors' support of the bid shopping bill was the National Electrical Contractors Assn. as represented by its executive vice-president, Paul M. Geary (left). A general contractor who backed up his views was Richard G. Nussmeyer of Evansville, Ind. (right). Seated between them is James G. Morris, executive secretary of the Boston Association of Heating, Piping and Air Conditioning Contractors.

PARTICIPATING in the Associated General Contractors' opposition to the bid shopping bill, which was bolstered by testimony of federal construction agency representatives, were, left to right, Robert A. Moyer of the Charles H. Tompkins Construction Co., Washington, D. C.; Earle J. Wheeler of Cincinnati, general contractor and president of Frank Messer & Sons, Inc., and John C. Hayes of Washington, D. C., AGC counsel.

SEN. EVERETT M. DIRKSEN was one of few members of the Senate committee opposing bid shopping legislation. He contended it means more government regulation of private industry.

tion agencies take a quite different view. In their eyes, the proposed legislation would increase construction costs, limit competition, interfere with efficient operation of the job, and add to the administrative costs and legal responsibilities of the government.

At the hearing, both sides gave a digest of last year's lengthy testimony, with minor additions. The specialty contractors had the easier time; most of the committee members at the session were authors or sponsors of the bills being discussed. For the specialty groups, the electrical contractors continued to carry the ball, with the support of the plumbing, heating and ventilating contractors.

Paul M. Geary, executive vice-president of the National Electrical Contractors Assn., submitted evidence from various parts of the country indicating that many specialty contractors have stopped entering sub-bids on federal work because of the prevalence of bid shopping. He contended that the proposed legislation would increase subcontractor competition and lower federal construction costs.

• Federal support for AGC stand—One general contractor, Richard G. Nussmeyer, of Evansville, Ind., backed up Geary's views, but two federal construction representatives, Brig. Gen. D. H. Tulley of the Defense Department and Commissioner W. E. Reynolds of the Public Buildings Service, blasted the contention that money would be saved. On the contrary, they saw the added difficulties of government administration and general contractor operation as causing bid mix-up and higher costs.

Three representatives of the Associated General Contractors continued the demolition job. Earle J. Wheeler, Cincinnati general contractor and president of Frank Messer and Sons, Inc., stood up firmly to a barrage of unfriendly questioning and made good his point that government regulation of a small portion of the industry would cut down competition for subcontracts and cost the taxpayer money.

John C. Hayes, counsel for the AGC, indicated the legal complications that would be created, including a federal board to hold hearings, and stressed the question of whether special legislation for a limited group of specialty contractors is constitutional. He reiterated the general contractors' contention that bidding practices are an industry problem to be settled properly within the industry.

• What about advance bidding?—Robert A. Moyer of the Charles H. Tompkins Co., Washington, D. C., added a practical flavor to the testimony by citing actual examples of the difficulties that general contractors would face under the proposed legislation. He pointed out that the proposed bill is discriminatory and that it would not eliminate bid peddling by subcontractors before bid time. E. D. Hockstra of the National Constructors Association backed up the AGC stand.

All these witnesses were heard in the same day. The next step is up to the subcommittees of the two houses.

Sen. William Langer, chairman of the Judiciary Committee and of the subcommittee, is in the driver's seat. And he signed on as one of seven cosponsors of this year's Senate bill (S. 848), introduced again by Sen. Harley M. Kilgore, ranking Democrat on the committee.

• Legislative approval is doubtful—Prompt action is expected from the Senate committee. Chairman Edgar A. Jonas of the Sizaman House Subcommittee planned to wait a few days to see what the Senate committee will do and to time his group's action in concert with that of the Senate.

Three of the six men on the House subcommittee are authors of bills. The subcommitee will urge the full judiciary committee to approve a bill, and the full committee is expected to report the one that carries the name of Rep. Jonas, H. R. 1825.

Even if bills reach the floors of Congress, in both the Senate and the House, approval by either chamber is less than likely. Congressional leaders are cool to special legislation that imposes new government requirements for the benefit of a limited group, and the almost unanimous agreement of general contractors and government construction agencies that the new regulations would increase both difficulties and costs will be a strong argument against the bill in an economy-minded Congress.

Composting trouble

Maryland city wants out after learning Long Island process doesn't work well

The Frazer-Eweson composting process in Bay Shore, N. Y., (ENR Nov. 6, 1952, p. 40) has not been producing as expected. Word of its troubles and inability to come anywhere near announced 10-ton-per-day output came last week from Hagerstown, Md.

Hagerstown officials had read ENR's report on the Bay Shore garbage composting plant. They had visited Bay Shore, saw what ENR had seen, heard what ENR had heard, and signed a contract. By late last week they had decided to try to get out of their contract.

Earlier in the week they discussed the process with principal persons involved. Called before Hagerstown's mayor and council were: Eric Eweson, inventor of the Frazer-Eweson process (J. W. Frazer, of Kaiser-Frazer is a backer); Peter J. Parise and son Leonard, owners of a big Long Island refuse collection operation (who now represent 50% stock ownership in the Bay Shore plant); Kurt Wandel, president of Wandel Machine Co., Downingtown, Pa. (whose grinders manufactured for the paper industry have had application to garbage destruction in Altoona, Pa., and who first brought the composter troubles in Bay Shore to the attention of Hagerstown officials).

Parise reported that the Bay Shore plant never has operated properly—the trouble being in dropping garbage from zone to zone down through the silo-like composter. He said production has averaged only 3 to 3½ tons per week.

Eweson admitted failure of the operation but blamed it on irregular charges of clean garbage.

According to City Engineer Claude D. Williams, the Maryland State Department of Agriculture has ordered Hagerstown to stop feeding uncooked garbage to hogs by July 1. (Other Maryland communities are similarly affected.) Williams stated last week that it looks as though Hagerstown may turn to the Wandel destructor. He says the device grinds up one ton of garbage mixed with water and air for 20 minutes and discharges it relatively inoffensive for subsequent piling or composting on the ground.

New Tappan Zee Bridge design attracts two bidders, both under cost estimate

Possibilities are bright that the Tappan Zee Bridge, which will carry the New York State Thruway over the widest part of the Hudson River, finally will be built. Not only were two bids submitted for the steel superstructure last week but they were under the engineer's estimate.

Last December, the Thruway Authority failed to receive any bids, apparently because inability of steel companies to meet the state's estimated cost (ENR Dec. 25, 1952, p. 27). At that time, plans called for inclusion of a 1,112-ft tied-arch span and 400-ft-long deck trusses in the superstructure. As a result of the lack of interest in bidding, the main spans were redesigned. The arch and flanking truss spans were replaced by cantilever trusses, which the designer, E. H. Praeger, of Madigan-Hyland, considers less attractive in appearance. Also, one pier was eliminated.

American Bridge Division of the United States Steel Corp. was low bidder on the redesign. Its bid of $28,807,092 for 1.41 miles of steel superstructure (43,000 tons) was more than a half-million dollars under that of the second bidder, Bethlehem Steel Corp. The latter bid $29,363,008.

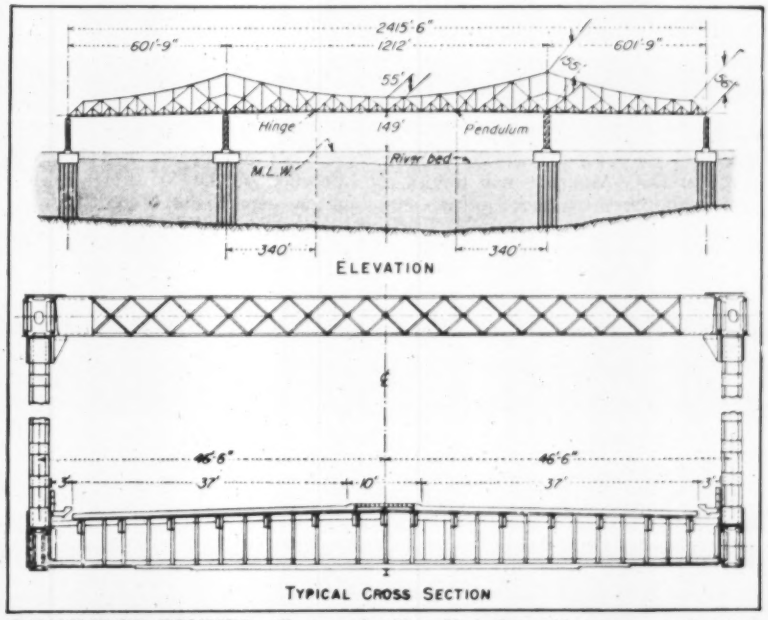
• **Three-mile-long bridge**—Expected to cost about $60 million, the bridge will be 15,300 ft long. It will be about 92 ft wide, sufficient for three lanes of traffic in each direction, separated by a 10-ft mall, and two 3½-ft-wide walks which are provided for inspection and maintenance.

At the west end, for a distance of 8,000 ft, there will be 160 steel-stringer spans carried on concrete bents spaced 50 ft apart. A $3,182,000 contract for the superstructure of this portion of the bridge, calling for fabrication and erection of 9,000 tons of steel, was awarded last February to American Bridge.

Continuing to the east, the roadway is carried on seven 250-ft-long deck trusses; these are part of particular interest in that the transverse members also are trusses, rather than conventionally used solid-web girders.

Next, to the east, are the cantilever trusses, which provide 135-ft vertical clearance over the river channel. Incorporating a 530-ft suspended span, the center portion spans 1,212 ft, the anchor arms, 600 ft each. The design of this portion of the bridge is of interest in that foundations, which were let under a separate contract, are floating concrete caissons on piles (ENR Nov. 13, 1952, p. 27). (Substructure contracts totaling $19 million were awarded last year to Merritt-Chapman & Scott Corp. and Construction Aggregates Corp.)

At the easterly end, the bridge terminates in thirteen 238-ft-long deck-truss spans.



CANTILEVER TRUSSES will carry the New York State Thruway over the main channel of the Hudson River. Foundations are hollow concrete-caissons on piles.

THRUWAY at its southern end will connect with important highways and will cross the Hudson between Nyack and Tarrytown on a 15,000-ft long bridge.

Being a part of the 535-mi New York State Thruway between New York City and Buffalo, this bridge will be financed by a bond issue backed by state credit and to be paid off by income derived from users of the thruway. The new bridge will cross the Hudson between Tarrytown and South Nyack, about 27 mi from the mouth of the river.

• **Controversial site**—This location, requiring a crossing over the wide portion of the Hudson known as the Tappan Zee, raised many questions when first proposed (ENR Feb. 1, 1951, p. 112). However, the Thruway Authority advanced sufficient reasons to justify it.

These included the necessity of connecting with the New Jersey Turnpike, New England thruway, N. Y. Route 17 and the Major Deegan Expressway, a north-south route through New York City—without compelling motorists to double back. The site also had to be this far (16 mi) north of the George Washington Bridge because of agreements with the Port of New York Authority. Furthermore, the terrain is favorable.

• **Another Hudson crossing**—The possibility of still another bridge over the Hudson also appeared brighter last week. Governor Dewey signed a bill authorizing the State Bridge Authority to study the economic and engineering feasibility of constructing a bridge between Newburgh and Beacon. The measure provides, however, that construction cannot be undertaken before completion of the proposed Kingston-Rhinecliff bridge over the Hudson.

Army engineers finding many flaws in Kansas River flow-way plan

Critics contend state consultants' plan provides inadequate flood protection, score cost estimates

Army engineers are finding plenty of what they regard as flaws in the preliminary report of three consultants to the Kansas legislature on the flow-way plan for controlling floods in the Kansas River (ENR March 5, p 21).

On a specific proposal of this sort, the officers of the Corps of Engineers are perfectly willing to express opinions. But they say only "no comment" when asked questions about the report of the Missouri River Survey Commission to the President (ENR Feb. 26, p. 24). The engineers are withholding opinions on commission recommendations until the President asks for comment.

No such reticence restrains them in dissecting the Kansas River proposal. The engineers take it apart with a keen scalpel. Allowing it to stand without rebuttal could set back seriously the active flood-control construction that the army engineers—with the Bureau of Reclamation—are pushing in the Kansas River Valley.

In essence, the proposal outlined by the three consultants in their preliminary report would eliminate dams completely and furnish protection only to urban areas by construction of flow-way channels to pass floods through towns and cities. The consulting engineers estimated that the flow-ways could be built for $200 million, as compared with a total cost that they said might run to $1 billion for the overall flood-control program now being considered.

A final report was promised for May 1. Flood-control engineers are awaiting it with interest to see if the consultants make any changes in their original findings or back up their proposals with additional technical data. In submitting their February report, the consultants did predict that any changes would be relatively minor.

Army engineers criticize the preliminary report on these main counts:

- Flow-way plan gives no protection to rural areas in flood plain.
- The report minimizes erroneously the flood damage to farms, highways, railroads and other public utilities in rural areas.
- Dumping Kansas River floods directly into the Missouri without any detention either would expose downstream lands to overflow or require expensive revision of protective works.
- Costs cited are not realistic. Actually the currently planned system of 36 flood-control reservoirs and 21 local protection projects would cost about $700 million, while the estimate of $200 million for the flow-ways appears too low.
- The present basic plan would furnish protection in the Kansas River Valley for a greater potential flood than that of 1951, while the flow-way proposal assumes the 1951 flood as the standard for design.
- Contention by the consultants that a comprehensive system of reservoirs cannot be operated successfully is disproved by experience in the Ohio River Basin and other great valleys.
- The report fails to test its proposals on a basis of benefit-to-cost evaluation.
- In assuming that the federal government would buy the needed real estate for the flow-ways, the report disregards national policy established by Congress.
- In suggesting that present construction of reservoirs like Tuttle Creek, Kirwin and Webster be held up until all conflicts are settled, the report ignores the long delay that would occur in furnishing needed protection.

What bothers the army engineers most is that revival of the discarded flow-way plan has confused the thinking of the people and their public officials in Kansas and elsewhere. If the report is not properly answered, they fear that flood protection in the Kansas River Valley and the entire Missouri Basin will suffer a severe setback and serious delay.

Tar-rubber base paving tests set

Air Force selects sites for experimental taxiway and aprons to study effect of jet fuel on material

The Air Force has decided to build an experimental taxiway using a coal tar-synthetic rubber binder for the surfacing as a means of further testing the possibilities of using this material on pavements subject to spills from jet planes (ENR March 5, p. 42), which soften asphaltic binders.

Site of the taxiway will be Davis-Monthan Air Base now under construction at Tuscon, Ariz. The taxiway, on which construction is scheduled to begin about May 15, will be composed of a 2½-in. binder course of asphaltic concrete with a top wearing surface of 1½ in. using the coal tar-synthetic rubber binder.

F-94C fighter interceptors to be based at Davis-Monthan will test the new apron pavement under routine jet operating conditions. It is expected to be ready for use about Aug. 1.

Davis-Monthan has been selected as the place to test the experimental concrete in a dry, hot climate. Five other bases have been selected as representative of other climatic conditions in the U. S. It is planned to construct parking aprons of the tar-rubber surfacing at these air bases: Hanscom, Mass., Laredo, Tex., McChord, Wash., Smoky Hill, Kan., and Walker, N. M.

Each of the experimental paving jobs will consist of a single apron or taxiway of from 20,000 to 30,000 sq yd of concrete.

Air Force engineers conducted patch tests on a 1,000-ft runway at Hunter Air Base, Savannah, Ga., in March, 1952, under moderately warm climatic conditions. Extensive tests followed last summer at Vicksburg, Miss. Further patch tests will be conducted at Presque Isle Air Base in Maine when spring weather removes the snow.

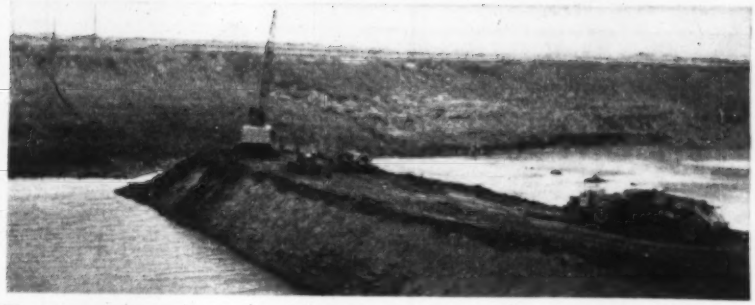
Meanwhile, parking aprons, taxiways, wash-rack areas where cleaning detergents injure asphaltic concrete, and a 1,000-ft stretch at each end of base runways, are being built with portland-cement concrete at all permanent Air Force installations where those areas formerly would have been paved with asphaltic concrete.

Court bars land taking until firm price is set

Practice of the Washington state highway department in starting work on a project before a price has been established on condemned property has been declared unconstitutional by a superior court ruling.

The state highway department, acting in accordance with a state law, had deposited $42,338 as "fair payment" for a piece of land and received an order of immediate possession. The owner refused to accept the payment.

The decision held that payment was invalid and that the procedure violated a provision of the state constitution that no private property shall be taken by the state "without just compensation having first been made." It ruled the state could not take over the land until the matter of price has been settled by a jury or approved by a court.



To speed removal of earthen plug of approach channel . . .

10 tractors haul 240-ton dragline two miles to site . . .

enabling work on build-up of cofferdam to proceed.

Garrison Dam event has minor crisis

But bottleneck to diversion operation is overcome; job aided by Missouri's unusually low spring flow

A 240-ton walking dragline made a two-mile "dash" to the rescue of diversion operations being carried out at the Army Engineers' Garrison Dam near Bismarck, N. D.

As a result, the diversion was accomplished routinely after a tense touch-and-go period.

The diversion plan called for making a cofferdam by dumping rocks from a construction trestle at the same time that workers were busy with the removal of a 60-ft-wide earthen plug from the approach channel to the dam's eight tunnels.

The cofferdam went up faster than expected. The earthen plug didn't come out as fast as anticipated. Result was the river was being dammed instead of diverted. A 5-ft head of water was created. The water's force washed the top foot and a half of rock off the cofferdam for a 100-ft section, and rolled the boulders downstream for 50 to 100 ft.

This situation arose because the dragline assigned to removing the plug proved inadequate. Army Engineers and contractors, in a quick field decision, ordered the 240-ton dragline, with its 140-ft boom and its 7-yd bucket, to the plug.

The big dragline was two miles downstream. Getting it quickly to the plug was an operation that gave a touch of drama to the event.

Curved sheet steel plates were welded to its feet to provide skids. Water sprinkler trucks were sent ahead to wet down the earth. Ten crawler tractors latched onto it and began dragging it to the plug.

• **Two crises arose**—Along a stretch where the roadway adjoined the river, the big dragline began sliding toward the water. Workers hooked the bucket into the ground and used the leverage of the boom to get the crane safely back on course.

At the dam proper, a right angle turn had to be negotiated. The convoy of dragline and tractors was too bulky to make so abrupt a turn. The tractors were unhooked. The skids were cut off the dragline. It walked itself around the turn. Then, the skids and tractors were replaced and the convoy resumed.

The two-mile trek took from 11 a.m. to 5 p.m.

Once the dragline was in operation, the threat to the diversion passed in a matter of hours.

• **Cofferdam**—The diversion cofferdam was constructed of boulders stockpiled since construction began in 1946. They were dropped into the river, 15 yd at a load, by end dump trucks working off the construction trestle in a conveyor-belt system. Trucks picked up a load on one bank, dumped it and continued to the opposite side for another load. Dumping pace for the 10,000 tons was at the rate of 40 truckloads an hour.

An unusually docile Missouri River permitted the diversion to occur at this time. Originally it had been scheduled for the interval between the spring flood and the June rise. Engineers were braced to divert a possible flow of 40,000 cfs.

The unusually dry winter held the spring flow down to around 15,000 cfs. Diversion took place almost a year to the week after the 1952 flood, with a flow of 400,000 cfs, raced past Bismarck.

The diversion was carried out under a joint venture contract held by Peter Kiewit Sons Co. and Morrison-Knudsen.

• **Statistics**—Garrison, a $289-million project now past the halfway mark, will be the world's second largest rolled earth dam (ENR Jan. 10, 1952, p. 29). It is more than two miles long, 210 ft high. Its five generators will have a capacity of 400,000 kw. Water will irrigate areas around the Souris, Sheyenne and James Rivers and the Devils Lake Basin to the east.

Industry spokesmen differ on Taft-Hartley changes

National Constructors representative takes position similar to unions while AGC differs from both

The construction industry is willing to accept some form of compulsory union membership, if it can be protected against jurisdictional strikes. The industry is divided on whether state "right to work" laws banning compulsory unionism should apply to construction.

That is the substance of testimony on Taft-Hartley law revision, witnesses from the construction industry have given the Senate Labor Committee.

The National Constructors Assn., through its president, John J. O'Donnell of New York, pleaded for passage of the bill (S. 1973) which got through the Senate last year. It would, in construction, permit the making of a union shop contract before work begins on a project, allow unions to force men to join the union within seven days instead of the normal 30-day period, and override state anti-union security laws.

• **Difference**—Sen. Robert A. Taft has re-introduced this bill (S. 656) with one difference: Contractors and building trades unions would have to respect the state restrictions on union shop. O'Donnell urged that the bill be restored to its original form. (That is the position AFL Building Trades president Richard J. Gray is expected to take when he testifies.)

Members of O'Donnell's association operate in 40 states, specializing in construction of petroleum refineries, chemical plants and steel mills. They find it difficult, he indicated, to conform to the different state laws with respect to hiring conditions.

If Congress passes S. 656 because it believes that union security arrangements are necessary in the construction industry, then it should also override restrictive state laws as the Senate did in passing S. 1973 last year, O'Donnell reasoned.

• **More difference**—A spokesman for the Northern California chapter of the Associated General Contractors disagreed with O'Donnell on the question of state laws. Charles L. Harney of San Francisco, general engineering contractor and director of the AGC chapter, told the Senate committee that—although the chapter is not supporting a "right-to-work" bill pending in the California legislature—the states should be free to enact such laws if they chose to do so.

JOHN J. O'DONNELL, president of the National Constructors Assn.

Harney did not support or oppose compulsory unionism in construction. He argued, however, that with compulsory unionism should be coupled some effective means of eliminating jurisdictional strikes. He asked that it be made mandatory, instead of discretionary, for the National Labor Relations Board's general counsel to obtain an injunction against a jurisdictional strike.

Harney praised the work of the National Joint Board in functioning in the industry to settle jurisdictional issues, but complained that it moved too slowly in many cases, and too often its decisions are ignored by aggressive, ambitious or hot-headed local leaders even in defiance of international union officers.

O'Donnell went along on this point to the extent of having a mandatory injunction apply to a jurisdictional strike, but only from the time the dispute occurs until the National Joint Board makes its decision.

• **Industry-wide bargaining**—Opposition to the various bills curbing industry-wide bargaining was voiced by the California chapter's counsel, Gardiner Johnson. He said that these bills go beyond industry-wide bargaining and also ban multi-employer and area-wide bargaining such as is practiced in northern California. This AGC chapter is the recognized bargaining agent for 250 contractors in 46 counties in dealing with seven AFL crafts.

Johnson also disclosed that NLRB's failure to hold elections in construction has denied to the industry "due process of law" under the Fifth Amendment. As a result, he said, a test is being planned in the Supreme Court of the government's right to bring unfair labor practice charges against contractors and building trades unions for certain hiring practices while, at the same time, denying them advantages which go with NLRB certification through elections.

Johnson's law firm is petitioning the Supreme Court to upset a decision of the Ninth Circuit Court of Appeals in February in the case of NLRB vs Swinerton and Walberg Co. That court brushed aside the issue of no elections in the construction industry as a problem "for Congress rather than the courts."

Grand jury probe of labor racketeering begun in St. Louis

A United States grand jury, under instruction to make an "exhaustive investigation" of reported labor racketeering in St. Louis and eastern Missouri, began an inquiry last week centered in the construction industry.

In a special charge to the jury, U. S. District Judge George H. Moore told of "reported terroristic activities by professional gangsters and unscrupulous officers and agents of labor organizations to extort money and property payments from employers, particularly contractors in the construction industry."

The jury is receiving information collected by the Federal Bureau of Investigation, which began an investigation 18 months ago. In that period there have been three unsolved killings of AFL building laborers' union leaders and unsolved bombings of steamfitters' union headquarters and the home of one of the steamfitters' leaders.

The judge told newspaper reporters that no pictures of witnesses would be taken anywhere in the federal building; that witnesses and jurors could not be questioned by reporters.

PLYMOUTH

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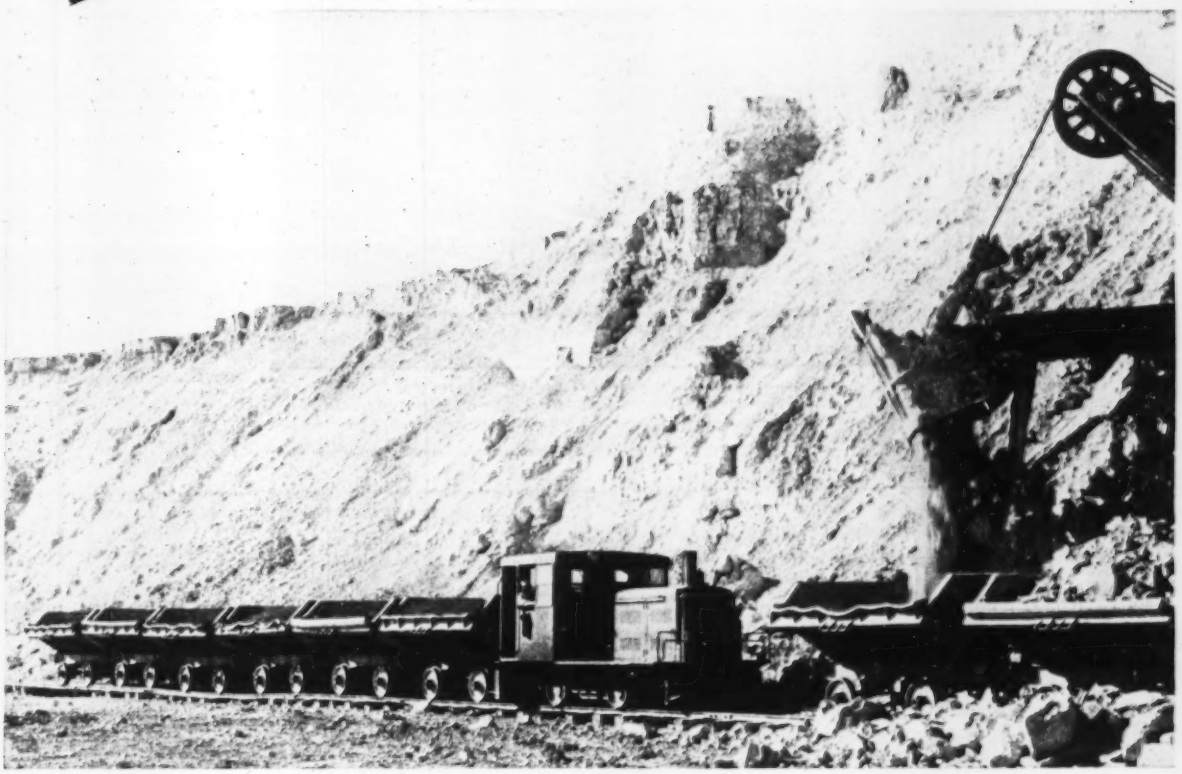

Here's proof that jobs don't come too big for Texans—*or for a Plymouth!*

Down in Texas a mountain of rock—or nearly that much—is being hauled away by the Longhorn Portland Cement Company. Prime mover in this big rock haul is an 18-ton Plymouth Locomotive. Checking up on how it performs, we contacted Gaines Voight, Chief Engineer on the job, and he had this to say: "The simplicity of its operation is what appeals to our operator —and as for me—well, the overall efficiency of our Plymouth is what I like. We've been using locomotives here since 1929, and in my opinion, this Plymouth is a very excellent machine. We've had it 2½ years and operate it 168 hours a month. Time spent for maintenance and repairs has been negligible."

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*Torqomotive: Plymouth transmission with hydraulic torque-converter

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Low Weight. Completed ceiling weighs less than one-half pound per square foot.

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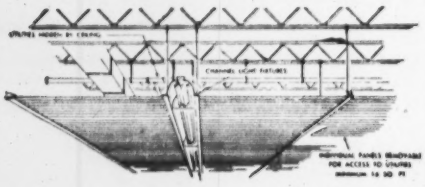
Adaptability to any air-conditioning, including plenum chamber above panels.



TYPICAL INSTALLATION. Panels are supported on aluminum angles and T-sections. Sound-absorbing material is laid on panels or attached directly to ceiling.

FRANCHISED APPLICATORS

ALABAMA: Badham Insulation, Birmingham; Stokes Interiors, Mobile.

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INDIANA: Brown-Anning-Johnson, Inc., Indianapolis.

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LOUISIANA: Walker Lloyd, Baton Rouge.

MAINE: Edw. F. Byrnes Co., Portland.

MARYLAND: Limbach Co., Hagerstown.

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Wage walkouts continue in widespread areas

Employers show signs of stiffening their resistance to pressure of wage demands by union workers

Between 2,500 and 3,000 construction workers went on strike in Baltimore, Md., last week in a wage dispute.

About 20 projects, representing million dollars in construction work in the Baltimore area, were affected by the walkout.

The strike followed rejection of union request for a 16-cent increase for laborers and helpers.

Union officials ordered picket lines set up at nine construction projects because the jobs of the striking laborers were being filled by non-union help.

Prior to the setting up of picket lines, skilled craftsmen stayed on the job following the laborers' walkout.

• **Mobile, Ala.**—More than 1,000 AFL building trades workers struck in Mobile, Ala., last week against the Associated General Contractors of Mobile over demands for higher wages. The Mobile Building Trades Council backed the strike for an immediate 10-cent hourly wage increase.

The strike halted most of the major projects in the area.

The walkout arose over the removal of wage controls. Last year the AGC agreed to a wage increase of 25 cents an hour—the Wage Stabilization Board cut this to 15 cents. Now the unions claim the extra 10 cents.

• **Strike threats**—Though contractors in Trumbull County, Ohio, have indicated that they do not intend to grant any pay raise this year, some 4,000 AFL building trades workers have threatened to strike April 30, unless new contracts are signed. . . . Some 4,000 to 4,500 carpenters have threatened to strike in southeastern Virginia and northeastern North Carolina unless a contract is signed with the employer group.

• **Strike end**—About 100 union painters in Syracuse, N. Y., ended their four-day strike upon receiving a pay increase of 10 cents an hour. . . . A three-day strike of carpenters in Licking County, Ohio, ended when a new contract was signed calling for a 15-cent an hour wage increase. . . . Fort Worth, Tex., sheet metal workers called off their 18-day stoppage accepting a 12½-cent an hour increase. In the same city structural steel workers signed a contract with the AGC for a 12½-cent hourly increase and ended a short strike.

Arizona labor unions ask wage scale change

Arizona organized labor wants a revision of the state's system for fixing a minimum wage scale for labor employed by the state and its departments.

Last March the highway commission, which fixes the scale, set the minimum at a flat $1 per hour applying to all types of labor, skilled and unskilled.

Labor spokesmen want a separate minimum scale for each of the 22 major labor classifications, contending it was unfair to set the same scale for artisans and common and unskilled labor.

Labor suggested that the basic wage scale in each of the various classifications be set at 30% less than the prevailing wage scale that applies to contractors on public works. This is fixed by the state industrial commission on the basis of wage scales applying generally in a given locality.

Elmer Vickers, secretary of the Arizona AFL, said the lack of a definite scale opens the door to suits against the state and its subdivisions under the minimum wage law, noting that more than 200 such suits now are pending in Maricopa County—Arizona's most populous—alone.

Union engineers

Toronto's board of control last week ruled that four professional engineers employed by the city will have to remain union members and take the $5 per week pay increase negotiated for union members.

Legal counsel for the Ontario Association of Professional Engineers had protested that the four engineers, who began city work in 1952, were requested to join Local 79 of the City Employees union. But Toronto's city solicitor answered the charge saying that the engineers had signed an agreement to join the union when they started work last year.

Meter installation dispute may halt Philadelphia plan

During the next three years water meters are going to be installed in every property in the city of Philadelphia.

It will cost more than $2 million for the installation and maintenance of the water meters. The money has been appropriated for the job by the city council.

Now a dispute has developed over who is to install the meters—master plumbers or the city's water bureau. If the dispute is not resolved it may delay or halt the program, at least for the time being.

The United Council of Master Plumbers Associations with some 1,600 members contends that the plumbing code requires a master plumber or his journeyman to make a water connection.

Water Commissioner Samuel S. Baxter says the Water Bureau will do the work unless the property owner himself has the work done by a plumber.

The representatives of the plumbers have engaged counsel to test the legality of the city's plan to install the meters on a contract basis.

California engineers balk at joining national group

Southern California Professional Engineering Association, one of the bargaining groups which had been expected to come in as a charter member with Engineers and Scientists of America, has decided against it.

In reporting its decision to the membership, SCPEA's executive board said that while "unity in the engineering profession is in itself laudable," the association preferred not to lose autonomy by joining a national group whose methods might be in disagreement with SCPEA's.

SCPEA's tendency toward militant organization seemed to be one point of disagreement. Also its possible standards of membership.

ESA also has a $4 per capita tax, which the SCPEA board believed might better be spent locally.

SCPEA has some 1,700 members with Douglas Aircraft Corp., Southern California Gas Co., and Los Angeles Department of Water and Power.

SILT-RECLAMATION WHARF on Susquehanna River is a conventional sheetpile-cell structure in an unconventional location.

They welcome silt in these reservoirs

TO MANY A DAM OPERATOR the word "silt" is a disquieting reminder of his worst headache. Hydroelectric projects have foundered on faulty appreciation of silting, and much money has been spent in efforts to overcome the problem.

But the silt in two reservoirs, at Holtwood and Safe Harbor, Pa., is money in the pockets of electricity users in that area. Once a blighting waste in anthracite coal regions up the Susquehanna from Safe Harbor, the silt contains coal that can be reclaimed at little more than half the cost of newly-mined fuel.

The fact that coal can be reclaimed has changed the complexion of a power utility's operation, and it has led to $25-million worth of construction, now under way.

• **River brings fuel**—Pennsylvania Water and Power Co., started the chain of events in 1910 by building Holtwood Dam for hydro power. The reservoir extends 8 miles up the Susquehanna River to Safe Harbor. Silt that came into the reservoir was found to contain anthracite fines. (In Pennsylvania this silt is called "culm", after the mine-waste heaps from which it erodes.) The coal content was so high that in 1921 PWP encouraged a new company to dredge and market the material. This product was given the name "river coal."

River-coal marketing had its ups and downs, but PWP saw a chance to use the fuel itself, and at the same time to take advantage of combined steam and hydro economies. In 1925 PWP put a 30,000-kw steam electric generating plant in operation at Holtwood. As river coal refining and burning techniques were improved in the ensuing years, PWP increased the proportion of river coal used with bituminous coal in Holtwood's furnaces, until in 1939 it was an all-river-coal operation.

ANTHRACITE COAL in river's silt comes from mine wastes in black areas.

• **Second interceptor**—Meanwhile, in 1930 PWP started a second dam, at Safe Harbor. The ten-mile reservoir began intercepting river coal at the rate of about 650,000 usable tons annually.

When World War II came to an end there still was enough coal in the lower reservoir to keep Holtwood steam plant going for several years, but it was time to think about using the new supply. Studies showed that the original Holtwood station, plus a 70,000-kw expansion could operate on available river coal for more than 40 years.

Annual requirement for fueling the 100,000-kw plant will be 500,000 tons. The 40-year estimate took into account the Pennsylvania clean streams program, which is expected to stop erosion from the man-made mountains of mine waste far upstream.

Under construction as a result of the study is the 70,000-kw addition to Holtwood station, plus coal reclamation facilities, just upstream from Safe Harbor Dam. The reservoirs now contain 18,000,000 tons of coal that can be reclaimed economically.

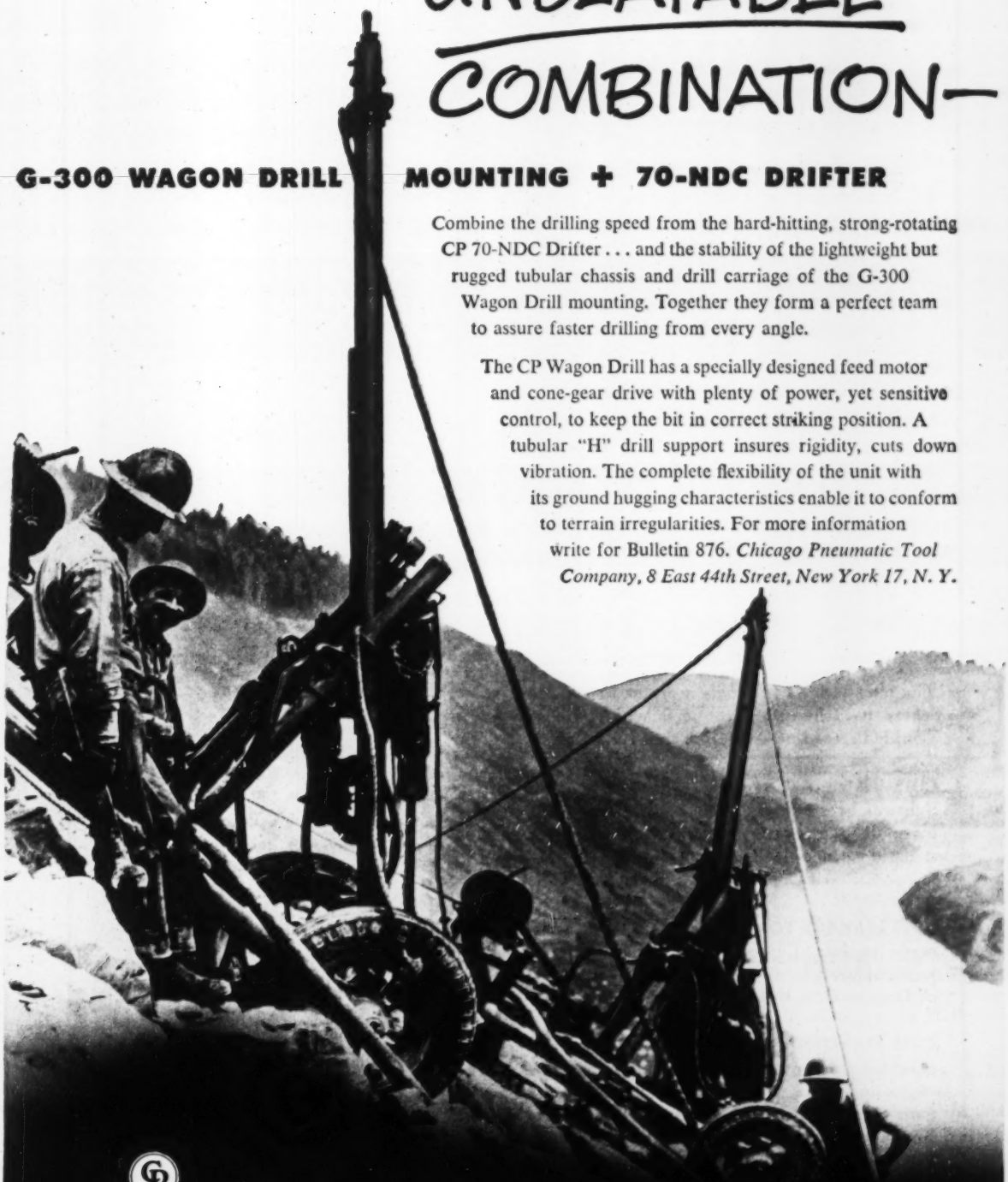
The reclamation project has three main features: 1. a new dredge and six barges; 2. a wharf and barge un-

AN UNBEATABLE COMBINATION—

G-300 WAGON DRILL MOUNTING + 70-NDC DRIFTER

Combine the drilling speed from the hard-hitting, strong-rotating CP 70-NDC Drifter . . . and the stability of the lightweight but rugged tubular chassis and drill carriage of the G-300 Wagon Drill mounting. Together they form a perfect team to assure faster drilling from every angle.

The CP Wagon Drill has a specially designed feed motor and cone-gear drive with plenty of power, yet sensitive control, to keep the bit in correct striking position. A tubular "H" drill support insures rigidity, cuts down vibration. The complete flexibility of the unit with its ground hugging characteristics enable it to conform to terrain irregularities. For more information write for Bulletin 876. *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*



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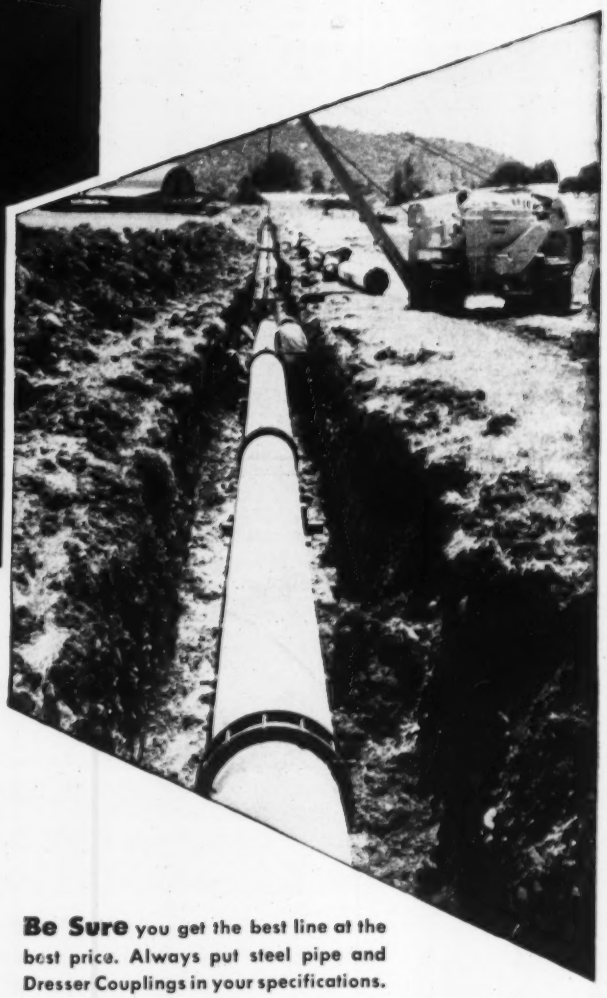
A DRESSER-COUPLED STEEL LINE delivers water cheaper



The cheapest way to deliver water to the place where it turns into revenue is with a Dresser-Coupled steel line—the line that . . .

CUTS INSTALLATION COSTS—Longer lengths of lightweight steel pipe can be Dresser-Coupled by small joining crews with no special skill. Construction proceeds rapidly in any weather, over any terrain with a minimum of heavy equipment.

CUTS LEAKAGE LOSSES—Joints are 100% tight, made to last. Correct sealing all around the joint, assured by the controlled gasket pressure of Dresser Couplings, eliminates leakage.

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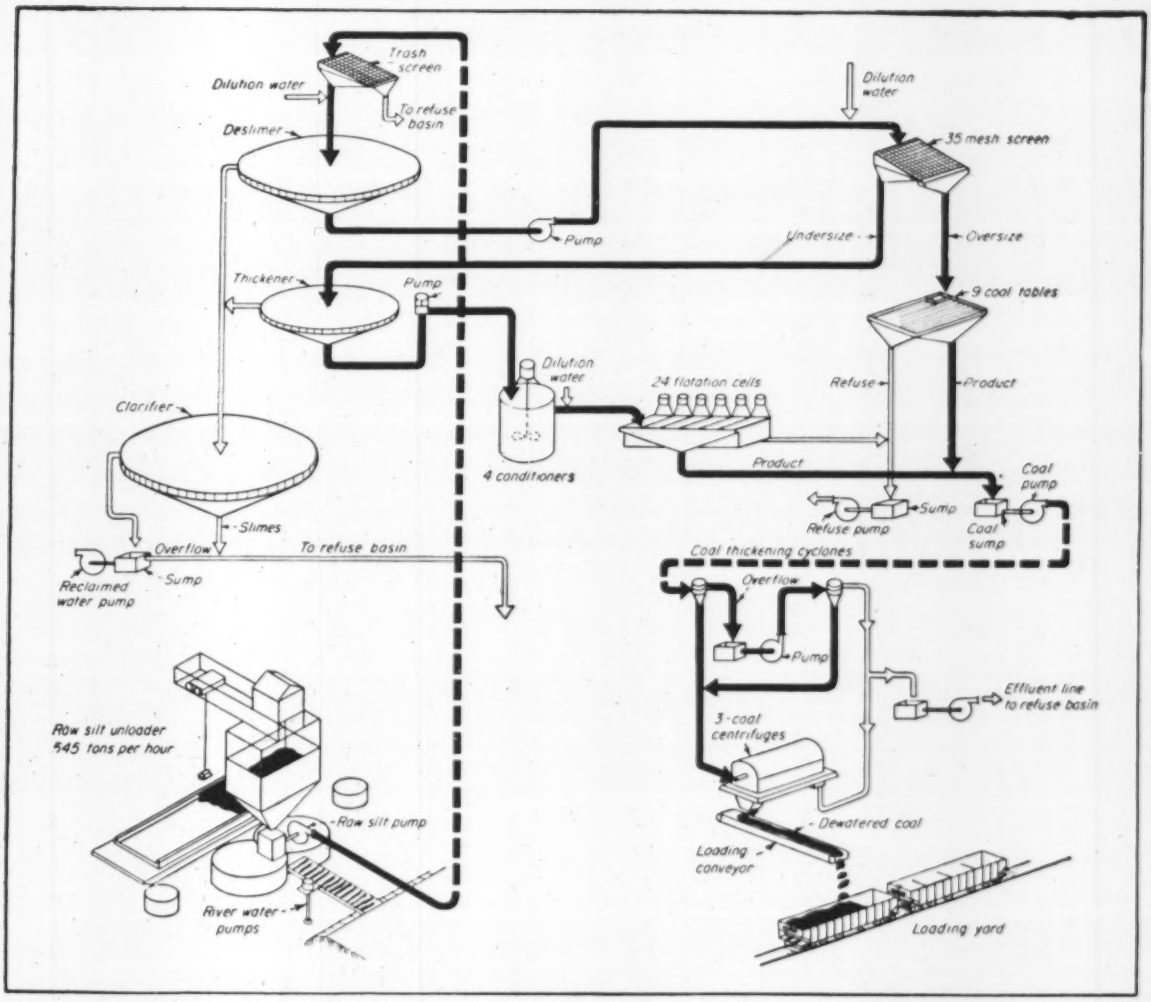


COAL-RECLAMATION PROCESS, in three steps: At wharf and unloader (lower left) silt unloaded from barges is pumped with water up to a washing plant (top), where fines get flotation treatment, coarse particles get shaking-table treatment. The product, coal, goes to a centrifuge (lower right) for dewatering and loading into gondolas.

loader that will handle 545 tons of raw silt per hour (described in the next article); 3, a coal reclaiming plant, described below.

Methods to be used at the coal reclaiming plant have been developed at Holtwood, in a small screening and washing plant that has been supplying the 30,000-kw steam plant. At the coal reclaiming plant at Safe Harbor, raw silt will be pumped from the unloading wharf to the coal reclaiming plant atop the adjacent bluff. Now under construction, this plant will perform one kind of operation on material retained on a 35-mesh screen; another kind on material the screen passes.

Material is water-borne throughout the process. After passing through trash racks it is deslimed and fed to the 35-mesh sizing screen. Oversize goes to "coal tables", which are standard items in the coal industry. Each table is in a tilted position, with slats on its surface. Material flows across the slats at a rate that permits sand (sp. gr. 2.75) to settle in the grooves while coal (sp. gr. 1.65) remains water-borne on its way to centrifuges. An elliptical shaking motion of the table hastens separation and causes sand to flow out of the grooves to disposal lines.

• Separated by flotation – Material passing the screen is separated by a flotation process. First it is thickened, then it is mixed with oil and a frothing agent.

Large paddles in the bottom of flotation-cell vessels agitate the mixture and cause an upflow to the surface. Oil, having an affinity for coal particles, but not for inorganic particles, carries coal to the top, where it is taken up in froth and skimmed off, to be pumped to the centrifuges. Inorganic particles settle to the bottom of the vessels, becoming sludge for disposal.

Coal lines from the coal tables and flotation cells join on their way to the centrifuges where the water-borne coal is dried to 13% moisture content and conveyed to gondola cars. These cars will take the river coal to Holtwood station.

Waste products from the various process steps will go to a refuse basin —a dammed-up creek valley near the plant. A substantial portion of the process water, however, is intercepted for re-use at points where dilution water is needed. (See drawing for lines of flow.)

• Money saved—Ash content of the reclaimed coal is 15%. Cost in bunkers at Holtwood station is about half the current cost of bituminous coal for power plant use.

In each reservoir there are three major deposits, extending along the left bank. More than 80% of the volume of each bank is economically reclaimable. That is, the coal content is high enough for reclamation (60% by volume), and raw silt is within reach of the dredge.

Silt does not fill an entire reservoir. River velocities and reservoir shape are such that the reservoirs are self-cleaning, the flow keeping at least 80,000 sq ft of cross-section open at all times.

Planning for the Safe Harbor river-coal reclamation project was under the direction of the late Donald Gunn, vice-president of PWP. The power company's construction superintendent is D. I. Smith. Designs for the coal reclamation plant were prepared by Western-Knapp Engineering Co., San Francisco; this firm also is the general contractor for the plant's construction.

Deep wharf cells stand by themselves

John H. Patterson, Engineer
Contracting Division, Dravo Corp.
Pittsburgh, Pa.

Dravo has built a great many sheetpile-cell wharves in recent years, but most of them were at sites where the sheetpiles could be driven deep into alluvial material. Thus, part of the cell's stability could depend on embedment.

At Safe Harbor the real bottom was rock, because the overlying culm was too light to afford much lateral support. Stability was achieved by removing culm from inside the cells, then filling them with heavy material. This procedure introduced special cell-construction problems. But first, for a description of the structure:

The wharf consists of a row of eight 20-ft dia cells, spaced on convenient centers, along which barges will be moored and moved. At the mid point of the structure is a twin foundation of 35½-ft dia cells that supports a coal unloader.

Wharf location is about 3,300 ft upstream from the Safe Harbor Hydroelectric Dam, at the closest convenient site to the coal washing plant. Because of rugged terrain and a dumped-rock fill along the shore in the vicinity of the dock site, it was necessary to establish the face of the dock about 115 ft from shore. This placed the sheetpile cells in water that stands 65 ft above the original river-bed. With the reservoir level relatively constant, the dock cells extend only eight ft above normal pool.

First among the problems of construction here was the unusually deep water, which called for floating equipment and special construction procedures. Another major problem arose from the fact that more than 30 ft of coal-laden silt had been deposited on the original rock bed of the river. This unstable, noncohesive material provided no firm support during the initial setting of the sheet piles. This condition, coupled with the exaggerated saw-toothed surface of the rock, made it difficult to keep the cells plumb.

• **Ice problems, too**—During the winter months a substantial sheet of ice sometimes forms on the reservoir. When this ice moves out, there are shoreward thrusts of the sheet of great force. The sheetpile mooring cells were designed to withstand not only the usual mooring forces of loaded barges during the operating season, but also this "push" of moving ice. The overturning force is resisted by the weight of the sheet piling and the material filling the cell. No value was assigned to the questionable passive resistance of the 30 ft of coal-laden silt overlying the rock. To provide maximum strength for the smallest diameter cell, it was necessary to remove all of the silt inside of the ring and sheet pile, and fill the cell with a heavy pervious material.

• **Navy pontoons**—To provide the floating equipment necessary to build the dock, the contractor used the pontoon cube system developed by the Seabees during World War II. The temporary fleet used for this job consisted of two electric whirler cranes on pontoon hulls, and three barge units that were made by fastening two strings of pontoons together.

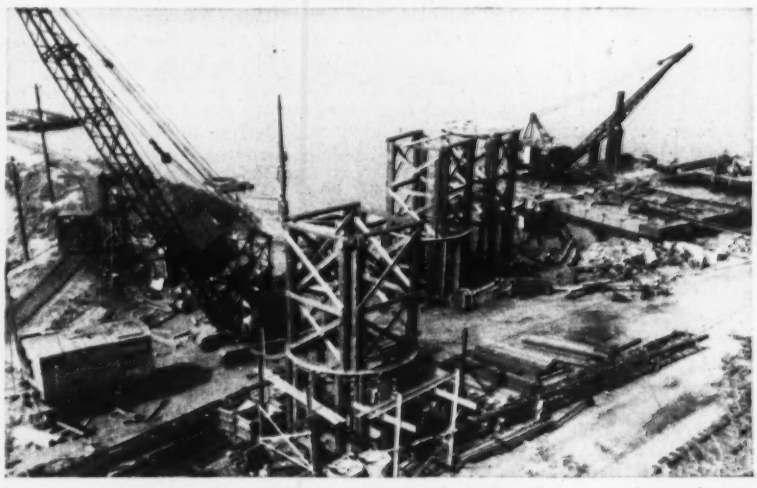
• **Unusual bracing**—To facilitate both the setting of the sheet piling and the dredging of the silt material, a dual purpose templet-bracing unit was built and used at each cell. This 16-ton, 32-ft-high unit was lifted into position by both floating cranes and held in proper location with four H-beam piles. The flat-web sheet piling, weighing 23 pounds to the foot, was set around the templet and driven into rock.

Clamshell buckets then dredged the unstable silt from inside the cell. As this excavation proceeded, the bracing unit was forced down to within 10 ft of rock to provide positive support for the sheetpiles. This prevented the pressure of the 30-ft depth of silt outside from collapsing the cylinder during excavating and filling. After the cells had been excavated to rock, dense fill was placed up to the bottom of the bracing unit. The bracing sets were then withdrawn in steps, keeping the lowest frames at levels above the fill material.

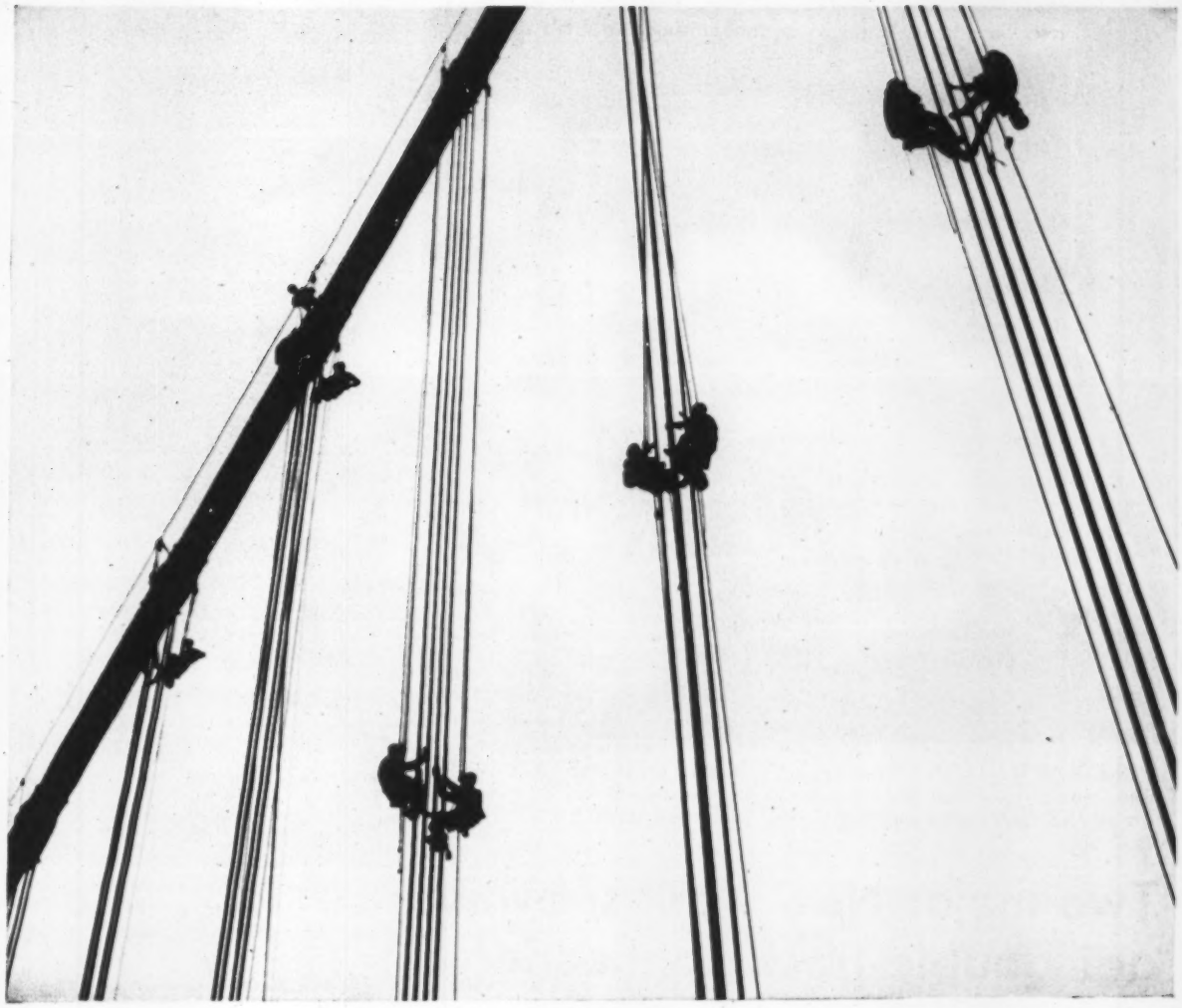
Cells of the coal-unloader foundation were joined by sheetpile arcs, and the enclosed area filled with cell-fill material. Steel H-beam bearing piles were driven within each cell to carry the large loads from the unloader columns. A 24-in. concrete cap with 4-ft deep circumferential girder was poured over the foundation. This cap was designed to be supported by the sheet piling, in conjunction with the bearing piles, and it will carry pumps and other machinery.

The barge unloader will be fabricated and installed by Dravo's Engineering Works Division.

Job superintendent for Dravo Corporation was Joseph Capuano.



DUAL PURPOSE templet and bracing units for sheetpile cells were sunk as culm was mucked from cells; withdrawn as stability-inducing fill was placed.



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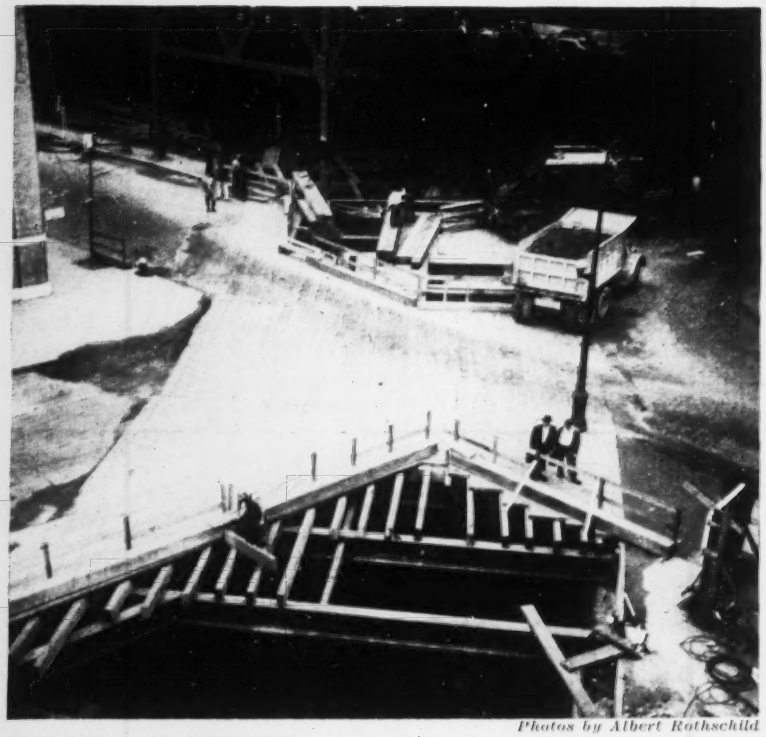
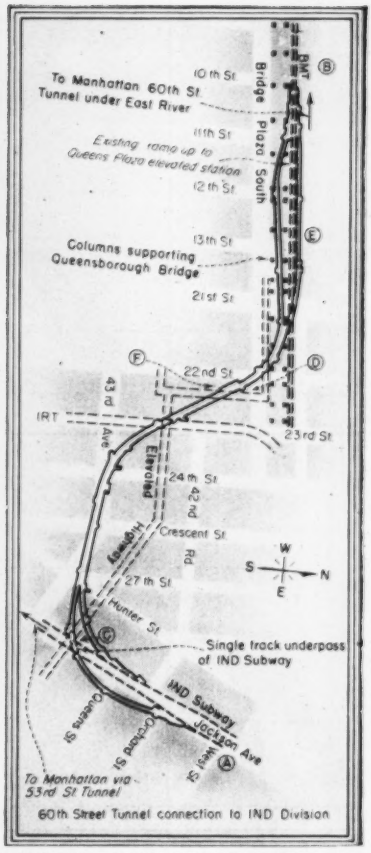


Photos by Albert Rothschild

WORK WAS ALL OPEN CUT except for 90 ft under the Jackson Ave. tracks (C on map). Streets were decked over and a clamshell worked through hatchways on decked-over sections. Steel beams supported decking and braced sheeting at street crossings (D on map).



TUNNEL CONNECTION will permit trains at A on map to operate through 60th Street tunnel (B, at top), easing the present jam in 53rd tunnel.

Two major New York subways get double-track connection

Alfred C. Maevis
Arthur A. Johnson Corp. & Mason & Hanger
New York, N. Y.

When New York City's $7-million, 3,900-ft Queen's subway connection is complete, fifteen more trains per hour, in both directions, will be able to run under the East River, to and from Manhattan. The Independent Division's Queens line, now crowding its own 53rd St. tunnel to capacity, will shunt part of its traffic into less-crowded 60th Street tunnel, which now receives traffic from an elevated route in Queens. The latter line is operated by the BMT Division of the New York City Board of Transportation.

Structural work on the double track connection is now nearing completion. Like most New York subway work of the past, this one has been a cut-and-cover job. Unlike the work of the past it has had no clear sailing down long stretches of open avenue. The connection runs under the Queensborough bridge ramp and one of its elevated approaches, under the IRT-BMT Queens Plaza "el" station, and then one track of the connection takes a deep dip to get under the IND Queens line tunnel in order to connect with the same line at Queens Plaza subway station. (C and A on map.)

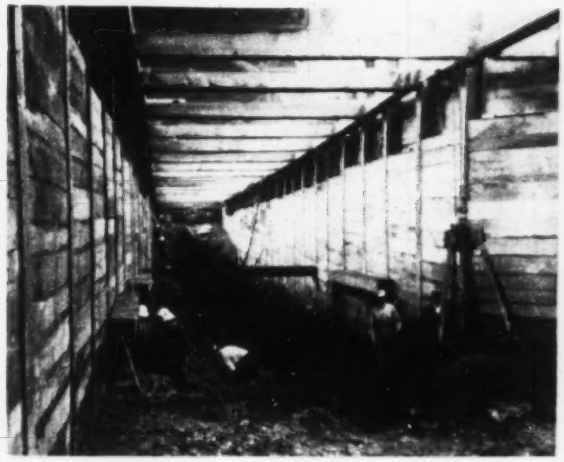
• **Basic methods**—The open cut work in private property was undecked. Power shovels took off a 12-ft lift and then 12-in. WF beam soldiers were driven to rock or 6-ft minimum penetration below subgrade, and their tops braced with 12x12 shores. Where the 6-ft minimum penetration couldn't be reached, because of high rock, the soldiers were braced at a point above the top of the future tunnel roof. Where the connection ran under streets the soldiers were driven first, a top lift taken off by power shovel, their tops braced with steel beams on 10-ft centers, decking placed on the beams, and the excavation completed by clamshell through hatchways.

Concrete exterior walls and subway invert were then formed and placed. After waterproofing, the invert beams were set, and the wall columns plumbed in place by hand and riveted. A roof beam completed each bent.

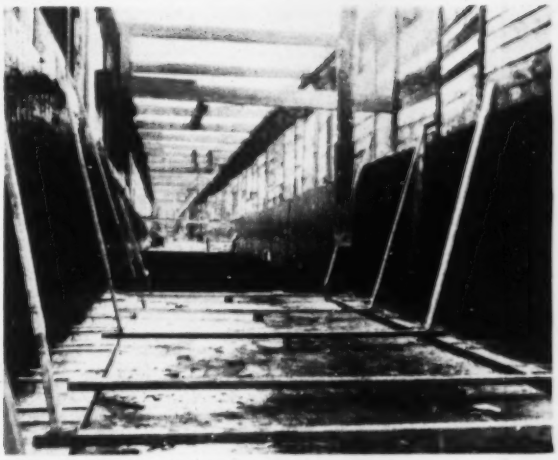
• **Problem of underpinning**—Elevated highway and "el" columns were braced up, where the open cut ran under them, by the needle beam method. Brackets were riveted to the column, and needle beams, on temporary cribbing, took the column load through the brackets by wedges driven between beam and bracket. Then the column footing was cut out, a pit dug to subgrade, and a temporary pier poured.

A grillage pedestal of I-beams was cast in place at the top of the temporary pier with the bottom flanges of the grillage 2 in. above the future tunnel roof. The needle beam was removed when the concrete pier was set, and open-cut work went ahead. Later, the column load was transferred through the grillage pedestal to the roof of the new tunnel by wedges, and the temporary pedestal cut out. A total of 23 columns was underpinned in this manner.

Buildings over the subway were sup-

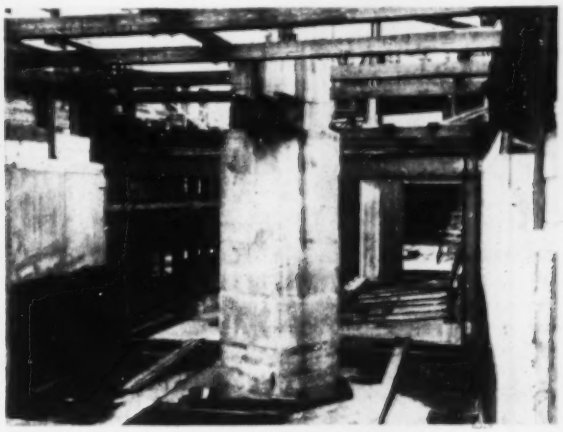


SOLDIER-BEAM SHEETING using 12 in. WF beams and planking protected cut, except for sandy area near Jackson Ave. where steel sheet piles were used. Soldiers were braced with 12x12 shores at their tops.



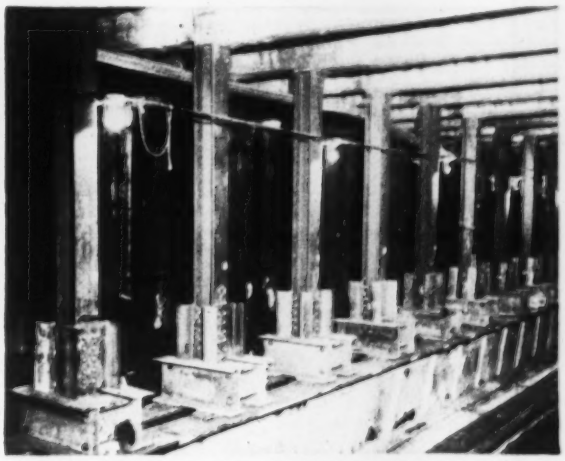
WATERPROOFING on side walls and invert in single track cut (E on map) was done with brick-in-mastic. Structural invert beams in background rest on a narrow concrete sill. Forms for proper elevation of beam supports are in foreground along the wall.

NEEDLE BEAM UNDERPINNING, for Queensborough bridge access-roadway column (F on map), is supported on temporary cribs. Pit excavation for temporary pier goes to new subgrade. Column load is transferred to beam by wedges.

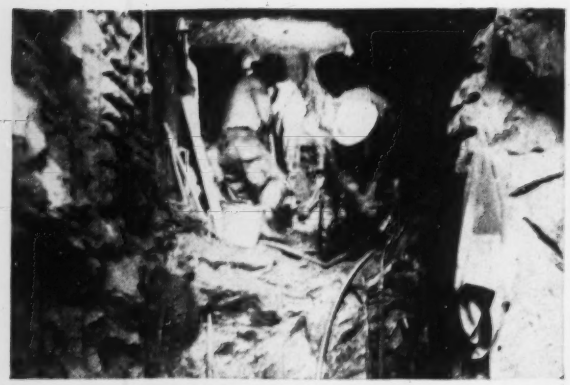


I-BEAM GRILLAGE at top of "el" column's temporary pier will rest on new subway's roof beams, then concrete pier will be cut out below. Load is transferred to roof beams by driving wedges.

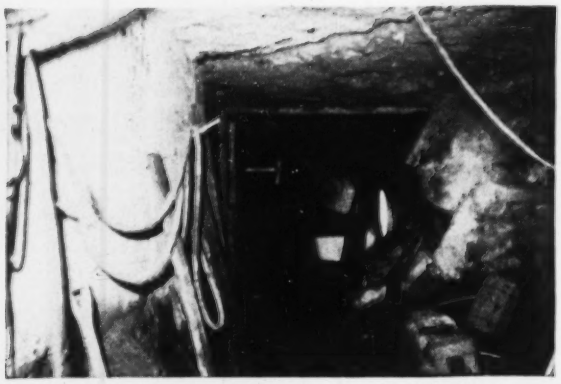
WIDE-FLANGE BEAMS, 36 in. deep, to span underpass for temporary support of existing subway columns, were brought in on flat cars on the Jackson Ave. tracks and unloaded with hand cranes between 12:01 A.M. and 7:00 A.M. Sunday mornings.



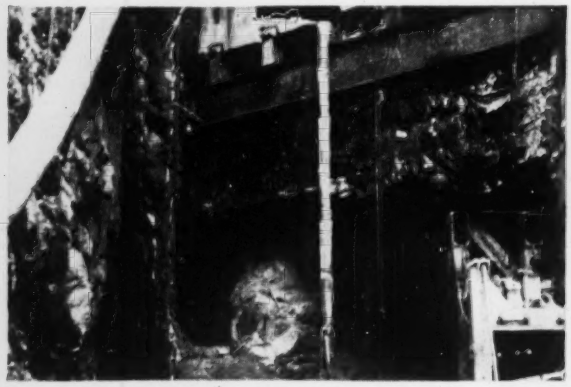
BRACKETS TO TRANSFER LOAD to 36-in. needle beams were riveted on existing columns and wedges driven. When new tunnel was finished 36-in. beams were removed and brackets burned off, the load now transferred to underpass roof.



DRIFTS FOR UNDERPASS (C on map) were started on both sides of the new tunnel. Underside of existing subway structure formed roof. Drift was made deep enough for vertical line drilling of lower bench.



CONCRETE UNDERPINNING wall at side of drift is founded on sound rock clear of new underpass and will help support temporary beams taking columnar load within existing subway when underpass is cut out.



WITH BOTH DRIFTS COMPLETE and temporary support beams in place, work was started on removal of core. Fabric waterproofing of existing subway can be seen below 36 in. WF beam that supports subway columns.

ROCK IN CENTRAL SECTION of open cut came within 6 in. of street. Temporary steel flume for sewer is protected from blasting by wooden slats. Rock was loaded into scale boxes and hoisted to street.

ported on steel beams spanning the subway cut on piers to rock or subgrade. When the subway structure was complete the foundation walls of these buildings were carried to the subway roof and the temporary underpinning removed. Buildings along the right of way were underpinned by the pier and beam method when they were within the area of a 1 on 1 slope with the subway excavation. A reinforced concrete beam was built below the foundation in this case and supported on piers built to sub-grade or one foot below the 1 on 1 slope line.

• **Underpass underpinning**—Toughest job of the whole project was underpinning the existing four-track subway at Jackson Ave. for the one-track underpass of the new connection. The undercrossing is on a 45-deg angle with the old subway, and only part of the existing structure rested on rock where the new connection would pass below.

Before any work for the underpass was begun under the existing structure, 36-in. WF 300 lb beams 60 ft long were installed within the operating subway. These carried the two lines of wall columns and three lines of interior columns. Stringers, 14-in. WF 184 lb, carrying extra-sized ties on their lower flanges, supported the track structure while the underpass was cut out below. To prevent excess deflection, the span of these stringers was limited to 29 ft by shoring up with 12 x 12's in the underpass.

• **Cutting the underpass**—For more than 75% of the length of the underpass, from one to five feet of sand separated the underside of the existing structure from the bed rock surface. Drifts, 6 ft high by 4 ft wide with the invert of the subway as their roofs, were driven at each net line of the new underpass. With the drifts as access passageways, 3-ft thick concrete underpinning walls were built outside the wall line of the new structure. These underpinning walls were built in 4-ft sections, with steel posts wedged from top of rock to underside of subway to permit excavation for the next section of wall before the previous section had gained its maximum strength.

The main cut in the underpass was excavated as the drifts progressed by blasting the rock in two benches and using a front-end loader to remove the muck. Blasting was carried out without any delay to trains operating overhead, but blasting could not be carried out during the morning and evening rush hours and no trains could be passing at time of blast.

• **Column load on bents**—With underpass excavation complete, invert concrete was placed, 6-in. concrete waterproofing walls placed against the rock, and the steel bents erected progressively from each end. Bent spacing was determined in the underpass by column locations in the existing structure overhead, each bent carrying the direct load of at least one column. Sand and cement were drypacked between top flange of new roof beam and footing of columns overhead to insure direct transmittal of load.

Construction of the tunnel is the joint venture of the Arthur A. Johnson Corp. and Mason and Hanger Co., Inc. It is being built for the Board of Transportation of New York City. The writer is project manager for the contractor.

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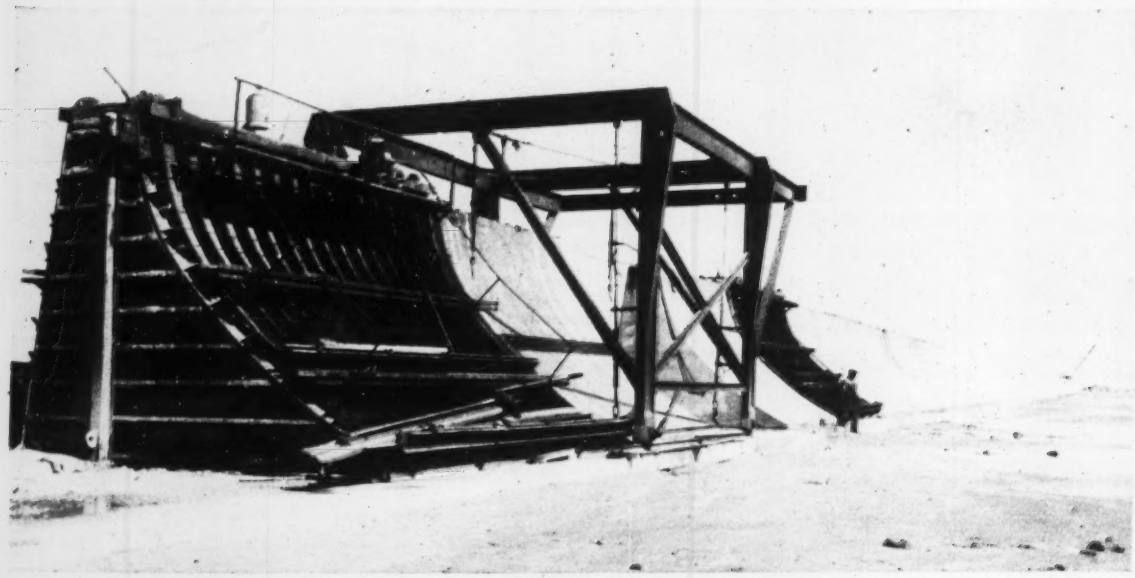
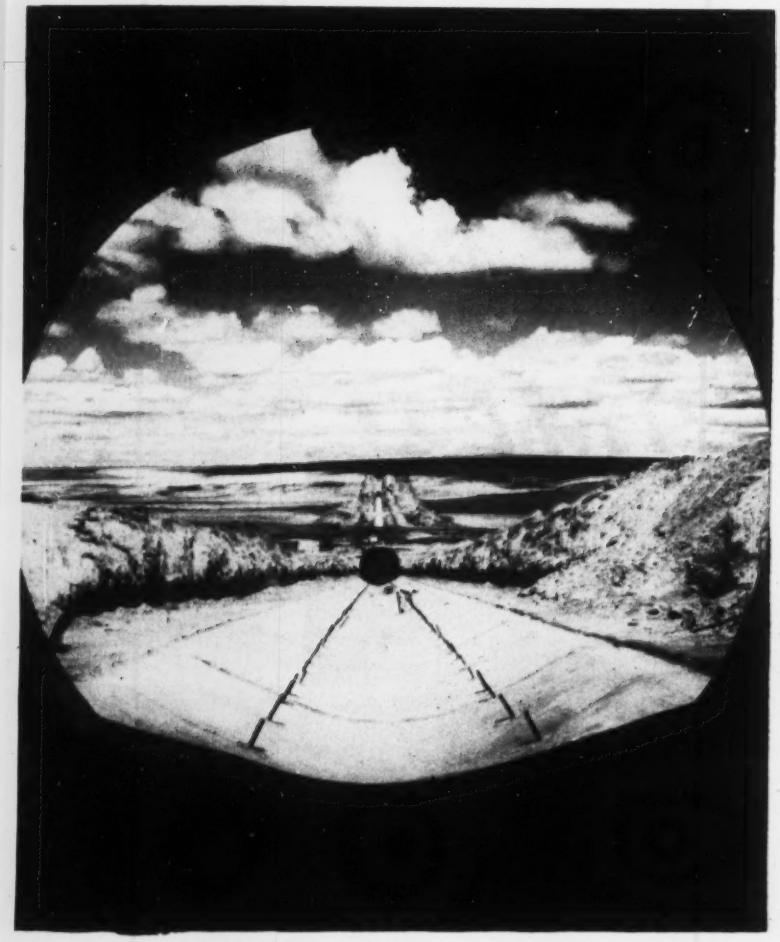




SEAWALL EXTENSION

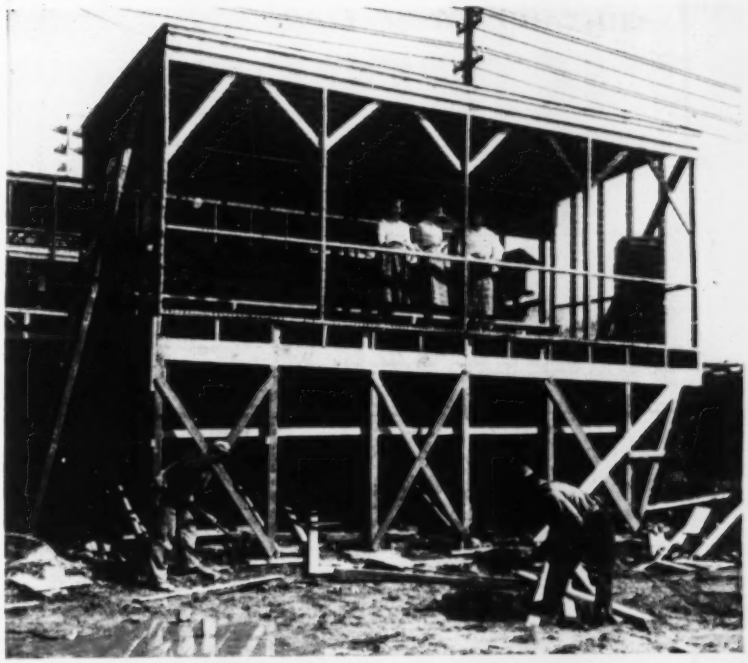
Facing the Gulf of Mexico, the mile-long westerly extension of the Galveston, Tex., seawall (above) has pushed beyond the half-way point. Steel forms (left and center), moved along by gantry, are used in construction. Each holds 150 yd of concrete and encloses a 20-ft section.

COLUMBIA BASIN SCENE

The rolling panorama of the Columbia basin is framed by the 14.6-ft Weber Coulee Siphon through which will flow a portion of the water for the great million-acre irrigation scheme. This 6,166-ft siphon is part of the East Low Canal, the 130-mile waterway upon which some $8 million of contracts are still under way.

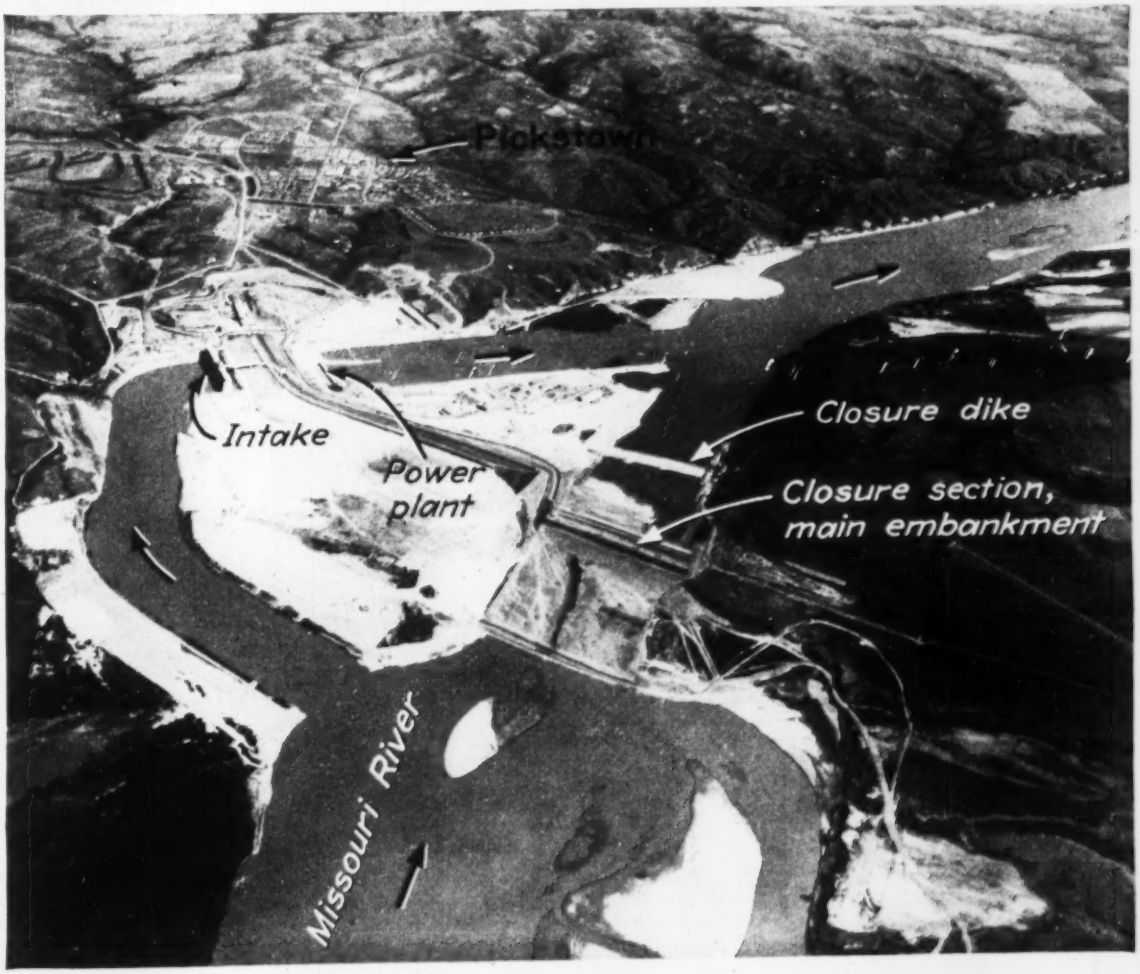
SIDEWALK GRANDSTAND

Bowing to the inevitable a Memphis, Tenn., contractor has provided a grandstand built especially for the sidewalk superintendents, complete with bleachers and soft drink dispenser.



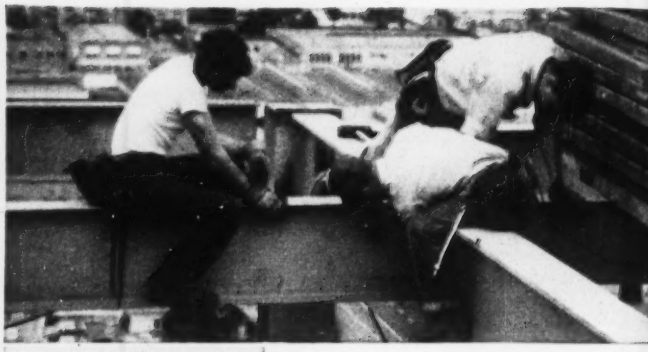
FORT RANDALL DAM

In South Dakota, Fort Randall Dam (below) is beginning to show how it will tame the Missouri River and put it to work. The 10,000 ft long, 160 ft high embankment was closed hydraulically last year, and work is proceeding toward a 1954 completion date. The cost tag of $198 million will provide a 6,300,000 ac-ft reservoir and a 320,000-kw plant.

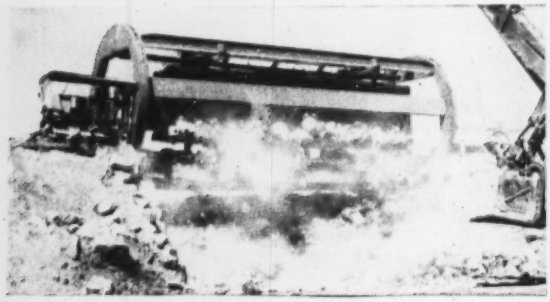


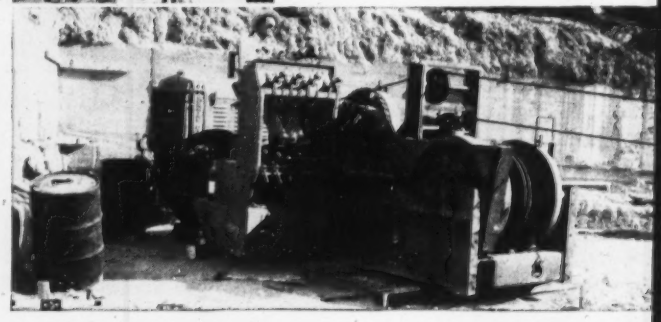
Pictures from Industry

These are excerpts from stories in the current issue of American Hoist & Derrick Company's house magazine, the American Crosby Clipper. If your business involves the use of hoists, derricks, locomotive cranes, revolver cranes, Crosby Clips or other equipment in our line, why not let us put your name on the mailing list. Use coupon on right hand page, to start with the current issue.



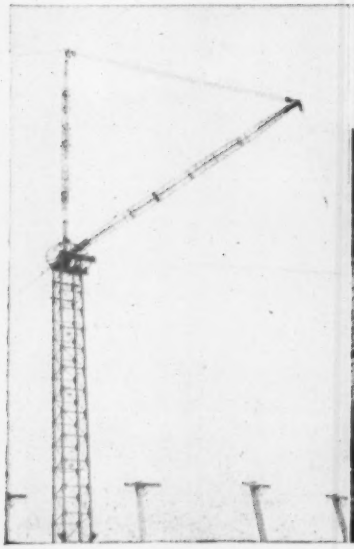
No machine-gun racket. People in offices and stores near the new Fidelity Union Life Building in Dallas were pleasantly surprised as this 20-story structure went up. The usual chatter of riveting was missing—and so was the noise of hammers. Steel framing was bolted and welded. New-type Cofar panels formed the floors. To handle steel and panels, John F. Beasley Const. Co. used an American Guy Derrick with 100-ft. boom, and an American Iron Workers Special Hoist, shown below.

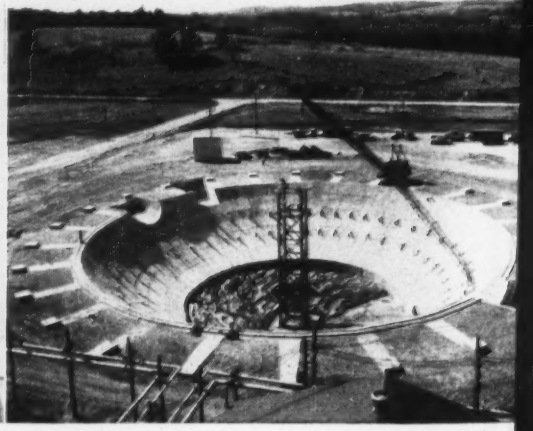




Not a grunt in a carload. To unload rock at Garrison Dam, Peter Kiewit and Sons Co. hustle gondola cars in and out of this elevated car dumper without a switch engine. An American Electric Drum Type Car Puller, and gravity, make the job quick and easy.

Atomic bowl game. This saucer-shaped basin will hold the largest steel sphere ever built—an atomic power plant being constructed at Milton, N. Y. The American Steel Erectors Derrick will assemble the big steel ball plate by plate.





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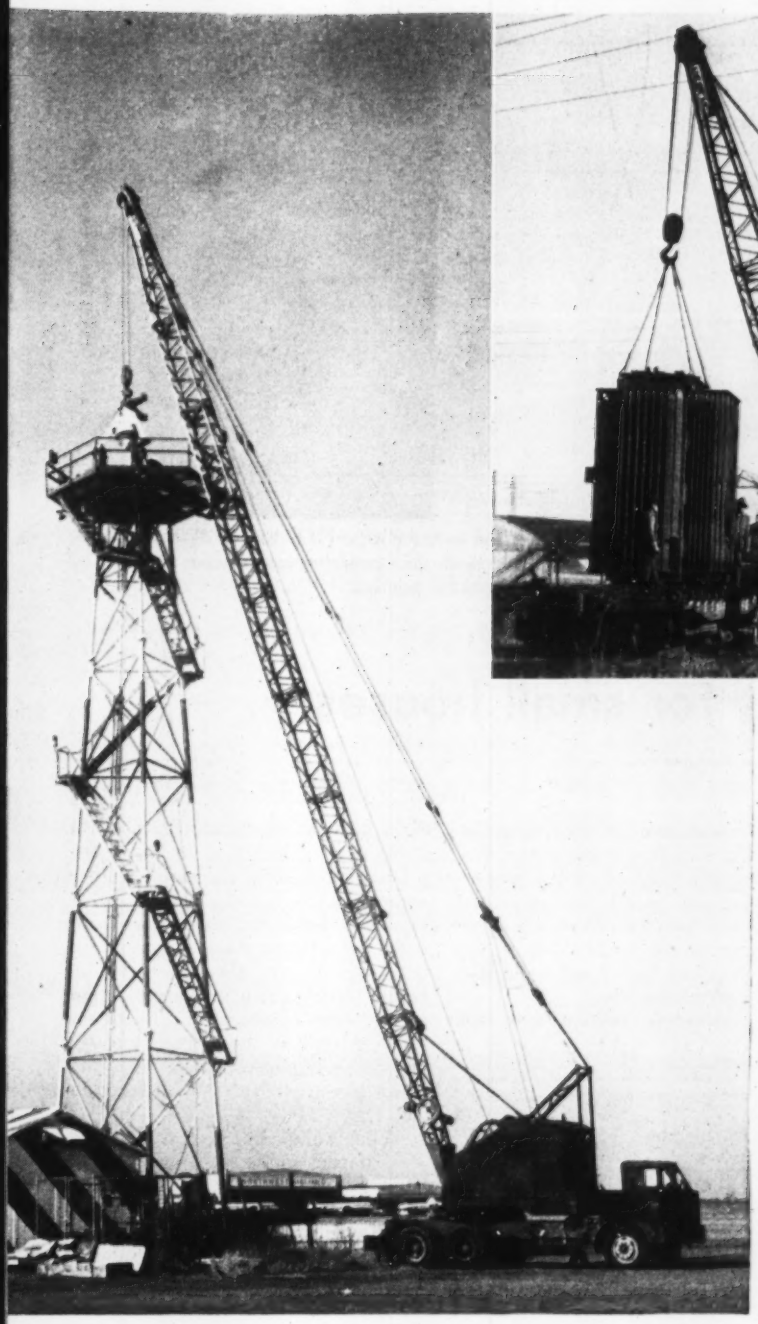

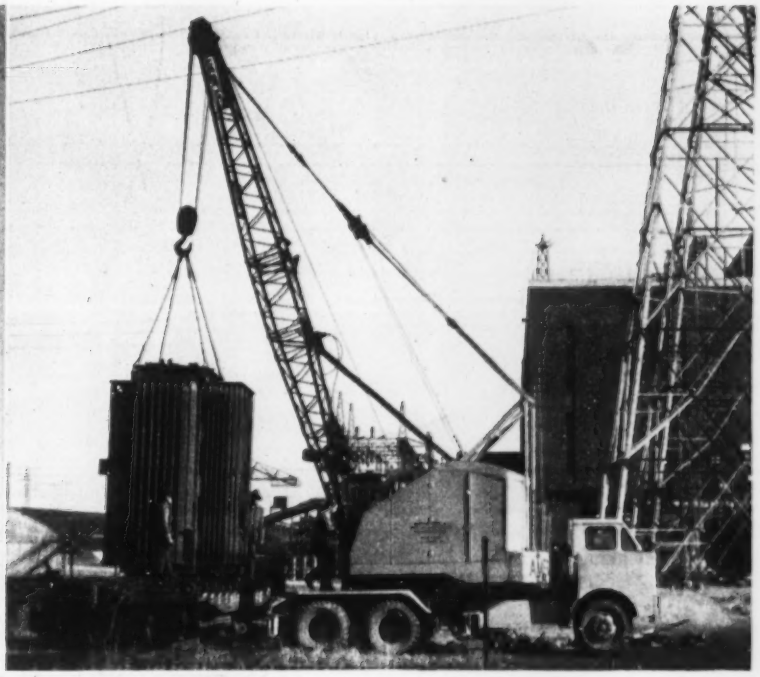

Power to spare. To pick up this unneeded transformer at a generating plant, swing it and place it on a flatcar, contractor Charles E. Knappen of South Bend, Indiana needed a truck crane he could *trust*. This was a capacity load; and the stakes were high. So Knappen used his American 375 Truck Crane, swung the valuable load aboard without a scratch, and proved his own statement: "If American Cranes are as good as American hoists and derricks, they must be the best."

New radar surveillance. Radar scanning towers, like this one at Wold-Chamberlain Airport, Minneapolis-St. Paul, must of course be built high, to "see" over nearby obstructions. But placing the 15-foot antenna atop the tower was an easy reach for the 100-foot boom of this American 375 Truck Crane. The job was handled by Henry Lambert Trucking Co. of Minneapolis.

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SANDWICH WALL PANELS for house in Allentown, Pa., were formed on floor slab in three steps: (1) casting of 3½-in. thick concrete outer facing, (2) setting 1½-in. thick cellular-glass insulation blocks, (3) casting 1½-in. thick perlite-concrete interior facing. Wire reinforcing mesh is used in both layers of concrete, and the perlite is steel-float finished for painting.

Precast panel walls for small houses

Precast wall construction usually is in the province of big builders and large building projects. The residential building field, however, can also make good use of precasting techniques.

This was demonstrated on two small jobs. One was carried out by Lynn Ross, contractor of Allentown, Pa., who built wall panels of precast concrete and cellular-glass insulation and erected them by tilt-up, at costs as low as $0.80 per sq. ft. of wall area for houses in Allentown. The other was executed in Barrington, Ill., by Harry Weese, architect and engineer, of Chicago, who built a house entirely of precast elements, including partitions and roof, utilizing lightweight foam concrete, at a cost of $0.97 per sq. ft of wall area.

• **In Allentown**—On a gravel fill Ross placed his shallow grade beam foundations and the radiant-heated concrete floor slab for the house. Then he cast his walls on plywood laid on the concrete floor of the house. After coating the plywood with a parting agent, he placed 6x6-in. No. 6 wire reinforcing mesh, wood window sash, threaded lifting inserts and door frames in the forms. He then poured the 3½-in. thick concrete outer face of the panel over this assembly and screeded it.

Next, Ross placed 1½-in. thick blocks of insulation on this layer and inserted metal ties between the blocks of insulation on 18-in. centers to tie the sandwich together. He laid 6x6-in. No. 10 wire reinforcing mesh in position over the insulation, and poured the perlite-concrete interior face of the panel. The final step in fabrication was screeding and finishing of the perlite-concrete. The perlite was steel-float finished to a hard smooth surface. This surface, being the interior face of the wall, needed no plaster and could take paint or paper directly.

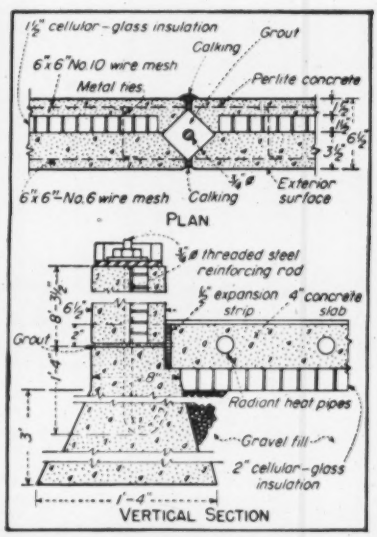
After stripping bottom and side forms, Ross put 1-in. ring bolts through the top form and screwed them into the threaded inserts. With a chain sling attached to the bolts, a ¾-ton truck lifted the panels with a boom and power take-off rig (7,200-lb capacity). Since the panels were cast with the exterior face down, it was necessary to give them a half turn before setting them in place in grout on the edge of the slab. Triangular strips, placed in the form before the concrete was poured, make horizontal bands in the exterior wall for a decorative effect.

When wall panels were set together, a V-shaped groove, cast in the side edge of each panel, formed a diamond-shaped void from foundation to top plate. A ¾-in. threaded steel reinforcing rod, previously cast in the foundation wall at the panel joints, extended 3 in. above the wall in the center of this space.

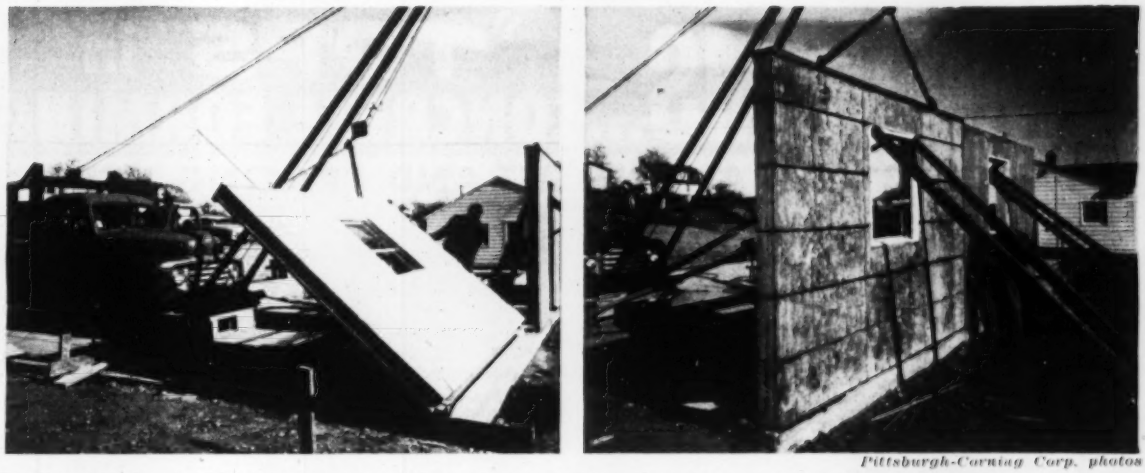
Ross poured grout in the void to form a rigid connection between the two panels and placed a 6x8-in. by ¼-in. thick steel plate over the threaded end of the reinforcing rod. Before the grout set, a nut was turned down, stressing the rod and anchoring the two panels firmly to the foundation. Wood rafter roof construction was then carried on in the conventional manner.

Ross completed a front elevation, consisting of three 12x8-ft by 6½-in. thick panels, from fabrication to final erection in four day's time.

Ross worked in collaboration with



VERTICAL JOINT between wall panels was filled with grout and calked. Nut tightened on threaded rod, hooked in footing, anchors the wall.



Pittsburgh-Corning Corp. photos

TRUCK EQUIPPED WITH BOOM tilted wall panels into place at edge of slab where they were set in grout. Panels were braced temporarily with timbers until grout set. When panels were placed, they had to be given a half turn in the air since the inner side of the wall was facing up.

Architects Heyl, Bond and Miller of Allentown.

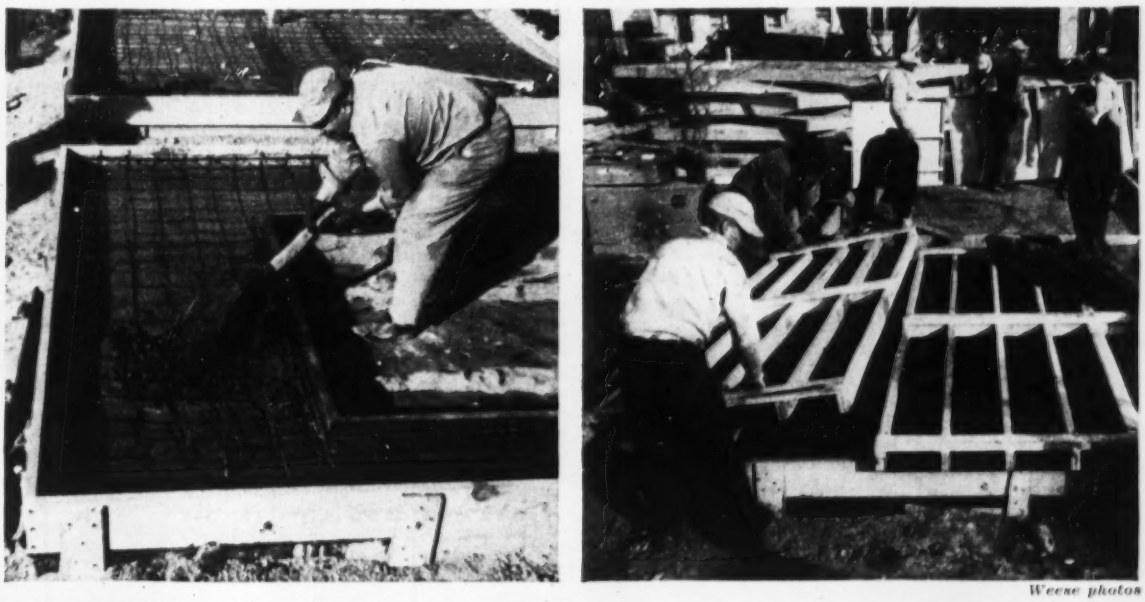
• **In Barrington, Ill.**—Harry Weese's mechanical processes were similar to Ross's: casting on a floor slab, placing of sash, outlets, and lifting inserts, and connecting of panels by keying and grouting. But his wall, 8 in. thick, is homogenous and placed in one pour. The major difference in techniques is in his use of lightweight foamed concrete that is pumped into the forms. As the concrete sets in the form, chemical action makes it rise 250%, giving a density of only 45 lb per cu ft. This concrete has good insulating properties: heat transmission coefficient for the 8-in. wall is reported to be 0.15.

Weese met the problem of screeding the concrete by setting perforated screens over the forms. These screens left a plane but slightly dimpled surface that could be trowled off while still green or left on for decorative effect.

The dimpled surface on the concrete is used as the exterior of the wall, and the smooth surface imparted by the form is the interior wall face. The exterior of the wall slabs was finished with masonry paint and the interior of the 8-in. walls with a rough-textured paint. Floor and roof slabs also were precast.

Floor slabs in Weese's houses were placed on short piers, forming a plenum beneath for hot-air circulation. The walls extend from the roof past the floor, to footings. The plenum is completely closed in and no large foundations are required.

Casting of the 30 slabs for this house took one week. They were cast in seven stacks, and after a short curing period all were erected by a 20-ton crane in two days. Largest slabs used were 11x15 ft. The contractor was Picke Construction Co. The foamed concrete was supplied by Cellular Concrete Contractors.



Weese photos

FOAM CONCRETE was pumped into wall forms on house floor slab (left). Perforated screens were set on the forms to insure a level surface on the foam concrete that rose 250% over the depth at which it was poured. Pocks from the screens could be screeded off.

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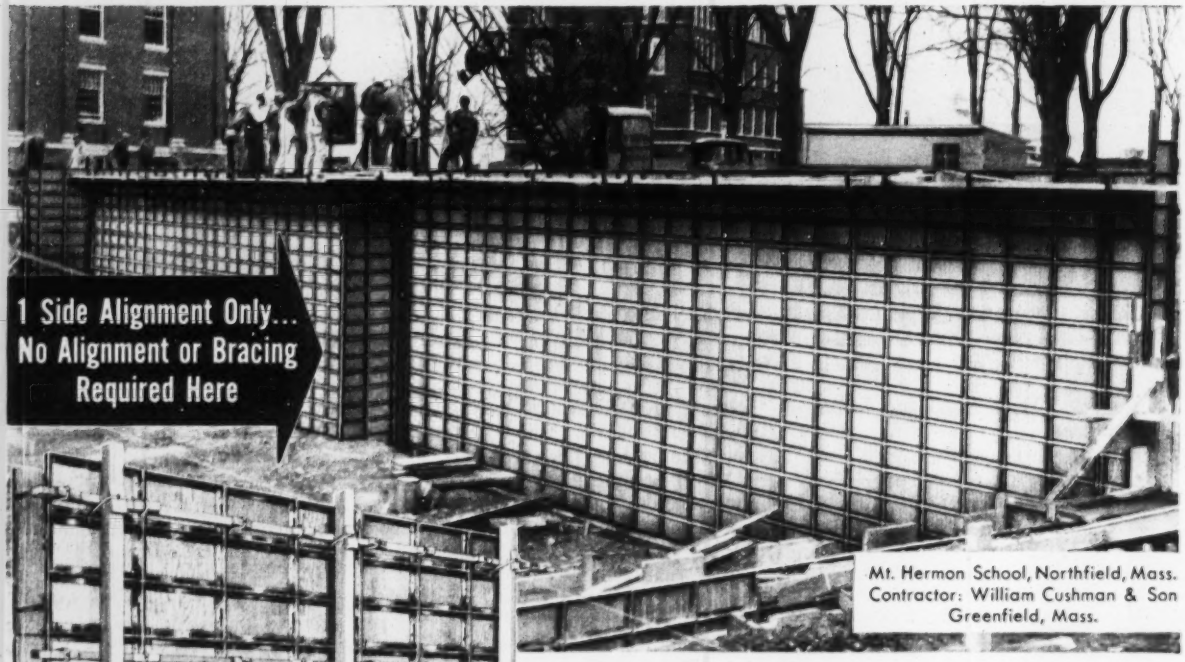

Mt. Hermon School, Northfield, Mass.
Contractor: William Cushman & Son
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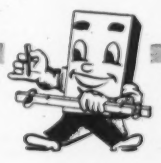

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Downtown parking pushed by cities

Cleveland considers underground garage while Baltimore and San Francisco plan structures above ground

Easing the downtown parking problem in four cities could cost over $5 million if present plans go through. San Francisco, Baltimore, Cleveland and Milwaukee all have city-sponsored garage projects in various stages of progress.

The most ambitious plan—at least from the money standpoint—is in San Francisco.

• **Site approved**—So far, the local parking authority has selected a site for its projected 900-car garage and had the choice approved by the finance committee of the board of supervisors. Next step will be the appropriation of $1.75 million needed for acquisition of the land.

The six-story garage—to be located at Ellis and O'Farrell Sts. close to the largest downtown department stores—would be built by private enterprise. The cost of the new structure is estimated between $1.75 million and $2.25 million.

Annual gross revenue is expected to hit about $625,000.

• **Baltimore progress**—Less ambitious—

"Cultural center" planned in Pittsburgh

Replacing the slums of the Lower Hill district of Pittsburgh, Pa., with a "cultural center" is the latest plan of the local urban redevelopment authority.

Featured in the plan are a municipal auditorium, a symphony-grand opera house, a two-theater playhouse and several skyscraper apartment buildings.

The auditorium (shown in the center of the picture) would have a retractable, circular roof for all-weather operation.

A large section of the seats also would rotate, thus providing an arena for sports events and a semi-circular bowl for light opera. There would be 8,500 seats for light opera, 14,000 for basketball, hockey and ice shows, and 16,700 seats for boxing matches.

The symphony-grand opera house would hold about 4,000.

To control traffic in the area, a circular street pattern would be used—along with parking for 2,400 vehicles.

Total cost of the project is expected to run about $50 million.

At present the project is in the cost study stage; the target date for this phase is set for the beginning of September. At that time, the project will be submitted to the federal government—which already has given the project its blessing—for approval. Authorities hope to start acquiring property by the end of the year.

First item for construction—probably the arena at a cost of about $15 million.

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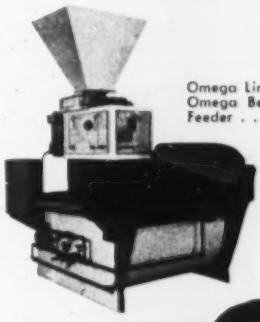

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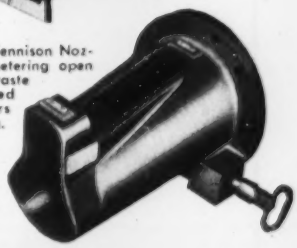

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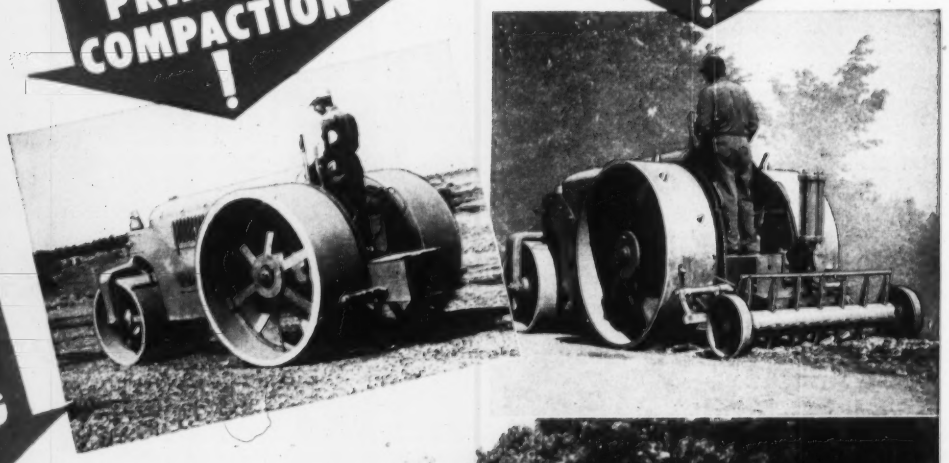

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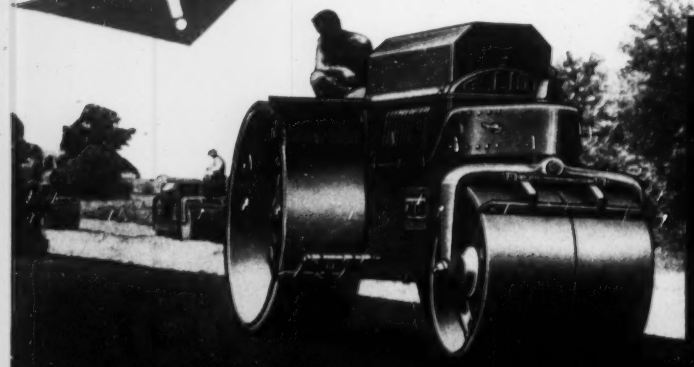

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but further along—is Baltimore's plan for the latest addition to a growing number of downtown parking garages.

The 310-car project will rise on the site of the old Rivoli Theater (now being demolished) located at Fayette and Gay Sts. The building will have five stories; total cost of the project is about $900,000.

This garage is part of an overall plan to increase parking in the downtown area. In the last four years, 15 garages—providing 3,079 spaces—have been completed. Most of the garages have space for about 250 to 300 cars since many of the city's streets are too narrow for traffic from huge single garages.

• **Under the Mall**—Unlike the plans of San Francisco and Baltimore, that of Cleveland won't have much effect on the city's skyline.

Plans call for a 1,000-car garage under the Mall in the downtown area.

As originally proposed, Morrison-Knudsen Co. of Boise, Idaho, was going to build the garage and operate it—for 40 years—on the basis of a rental from the city.

The company planned to sell gas, oil and do car servicing.

This plan struck a snag when it was learned that Ohio law forbids use of public property to compete with private business; the sales concession then was ruled out. A company survey showed the garage would be unprofitable without such sales.

Under a new plan, construction would be financed through bonds which would be retired from garage revenue and money collected in city parking meters.

• **Plans brewing**—Milwaukee, Wis., recently has appropriated $195,000 for purchase of a downtown lot suitable for a garage.

The city is now considering offers from individuals or groups interested in leasing the site, plus building—and operating—a garage. Lot size is 120 by 210 ft.

Money for the land purchase was derived from parking meter revenues.

Don't count, etc. . . .

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It's all for sale in Longview, Wash. The city council ordered the equipment when the idea was first proposed but, unfortunately, voters turned thumbs down on the proposition last month.

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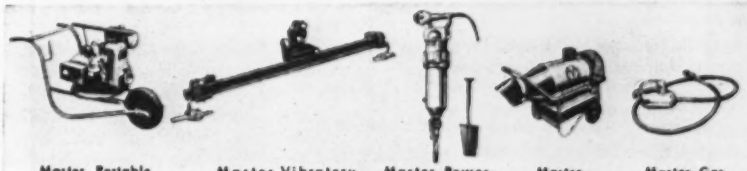

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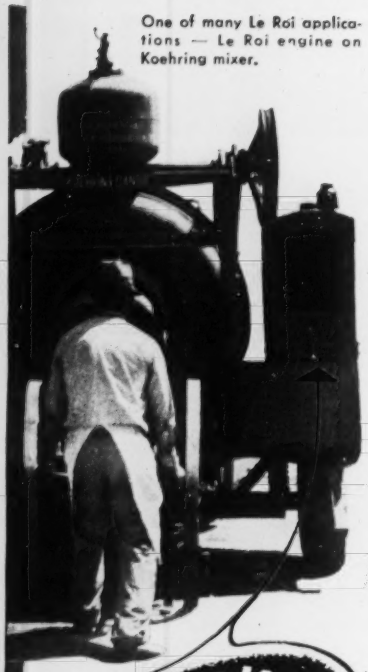

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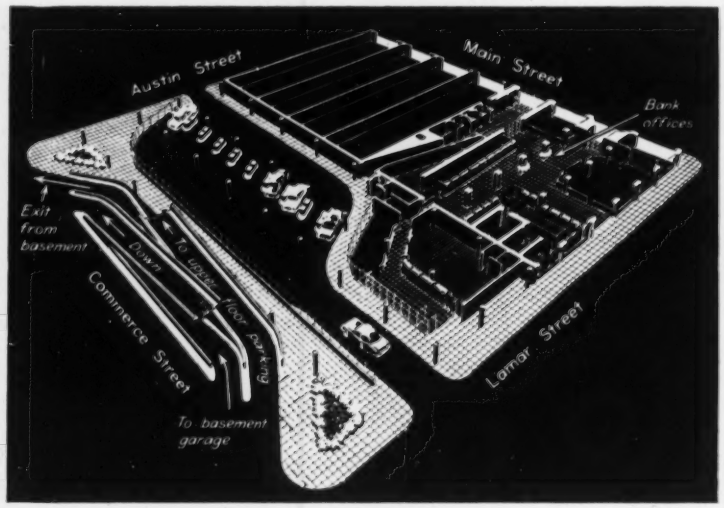
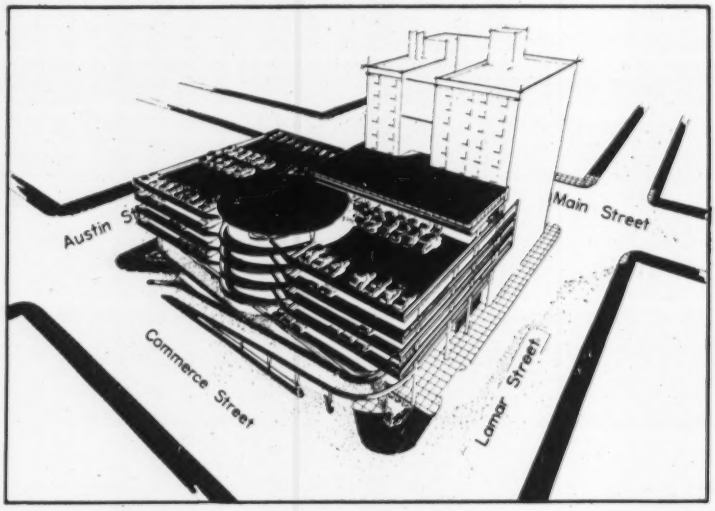


Drive-in bank . . .



combined with parking garage

This parking garage with drive-in banking facilities at the street level will be built to adjoin the present Texas Bank and Trust Co building in Dallas. It will cover an area 118x200 ft., providing a basement and four upper floors for parking, 2nd and main floor for banking activities.

Driving directly in from the street, motorists can complete their banking transactions at bank-teller islands built like toll booths without leaving their cars. The teller will slide a metal tray out to the car's window to serve as a counter.

Ramps, radiant heated to prevent icing, lead to parking areas in the basement and on upper floors. The round roof on top of the garage covers the spiral access ramp to upper floors. Continuous flat-slab reinforced concrete garage floors cantilever 15 to 18 ft. beyond supporting columns, to clear ramps.

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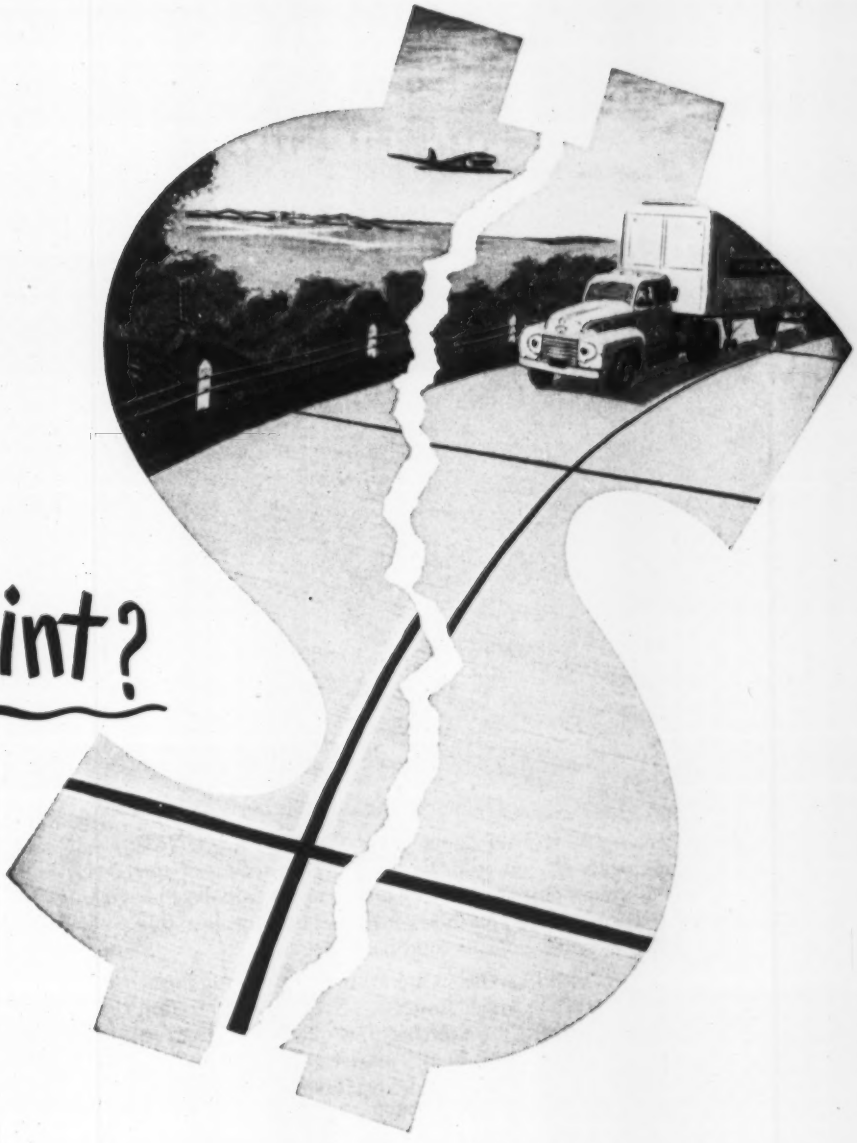
Are your maintenance costs

Out of joint?



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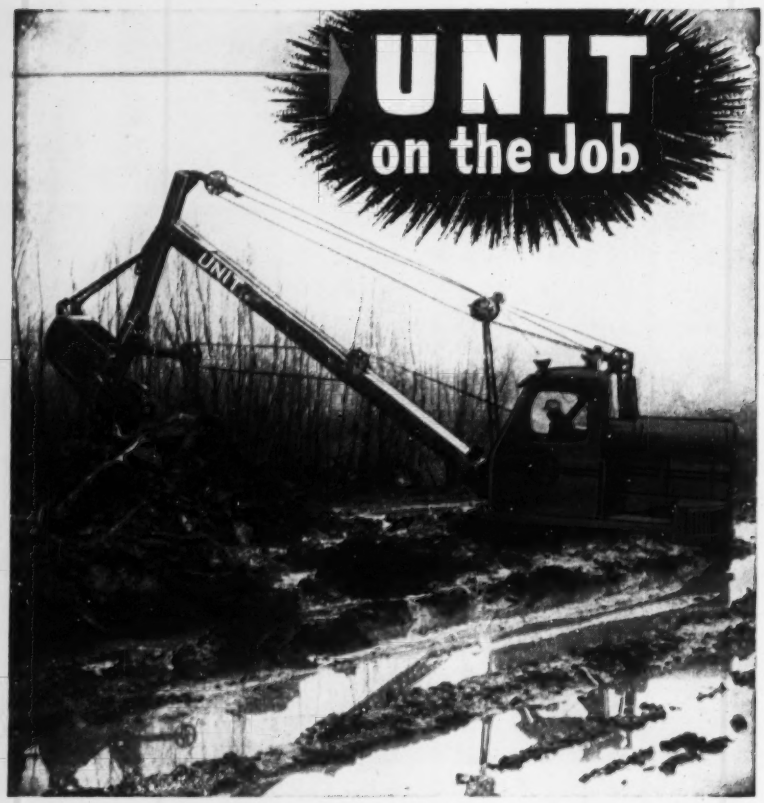

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Puget Sound area will get highway program study

All the sound and fury over proposed bridge and highway construction programs in the Puget Sound area—estimated at $325 million—was resolved recently by the Washington state legislature, which authorized additional studies, during the next two years, for three major projects:

- A $16-million floating bridge across Lake Washington east of Seattle.
- The bridging of Puget Sound and Hood Canal, west of Seattle, at a cost probably to exceed $100 million.
- A $200-million tollway from Tacoma to Everett through Seattle.

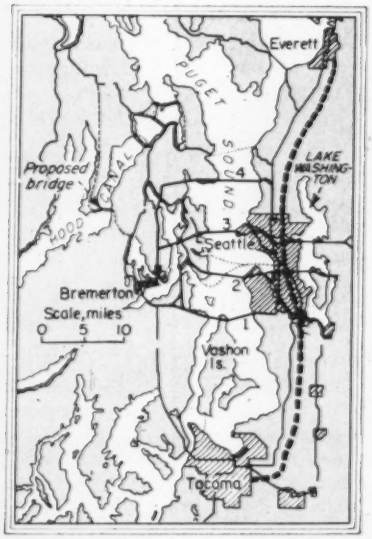
Closest to a construction start is the Lake Washington crossing. Bids may be taken next year if present differences of opinion can be ironed out.

• **Float or sink**—Latest controversy is between the Washington State Toll Bridge Authority and the Seattle Planning Commission.

The commission advocates a tunnel under the lake—rather than a floating bridge—to encourage development of the lake as a yachting center. They admit the tunnel would be a more expensive proposition.

Also in contention is the location of the crossing. The authority favors a Seattle terminus on the south shore of Union Bay, three miles north of the present floating bridge.

Terminus under the commission's plan would be at Sand Point, about five miles north of the existing bridge. Reason: The northward growth of population in the Seattle area.



The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L. E. Gurley, America's Oldest Engineering Instrument Maker

Second Annual Report to Surveyors

It has been a year now since our first report to you on the progress of "The Surveyor's Notebook."

In the past twelve months these "unusual surveying problems and their solutions" have helped an ever-growing number of engineers and surveyors to use their instruments with greater pleasure and profit. And the page has developed into a professional forum for exchange of useful information—and, sometimes, a discussion of controversial techniques.

Jack Goggin, Marathon, Fla.

Thousands of copies of the collected articles from the first year's series have gone out to surveyors who asked for them. In fact, requests from field men were so numerous that a third printing is nearly exhausted.

And now we are pleased to announce that the second year's stories and tips from "The Surveyor's Notebook" have been gathered together and reprinted in permanent form.

Tractor and Level Whip Mud Flats

The problems and "tricks of the trade" in Series 2 are new. George Gabus of New York City's Board of Water Supply, for instance, tells you his method of eliminating errors in precise alignment. A Cleburne, Texas, surveyor relates what can be done about weather conditions hampering every man in the field.

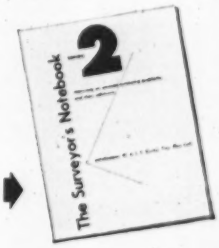
On one page, Chicago's George Salter shows how to subdivide 50,000 acres into nearly 200 lots in accordance with the rights of 600 people. On another, Maryland's Wesson Cook gives his method for bringing in stations in the muck of the Red River Valley.

Surveying the Antarctic

The Virginian Railway Company's Henry Stanley will cause a great deal of comment, we are sure, with his use of the gradienter in rough terrain; and G. W. Herzog of Shell Oil Company may surprise you with his use of a level on a tractor for whipping mud flats.

"A Bit More Mauka, a Few Feet Makai" describes how Prof. Russell Brinker of VPI solved unique problems in tracing old land deeds in Hawaii. And Comdr. Richard Black recounts his adventures while surveying the Antarctic.

John Goggin's method of determining in the field, without calculation, whether or not a survey closes will solve many a headache, as will S. E. Huey's page on getting more out of your compass. And a New Hampshire forester and land surveyor, Gerald Hyde, even tells how a surveyor can add new business with alignment jobs *inside* industrial plants.



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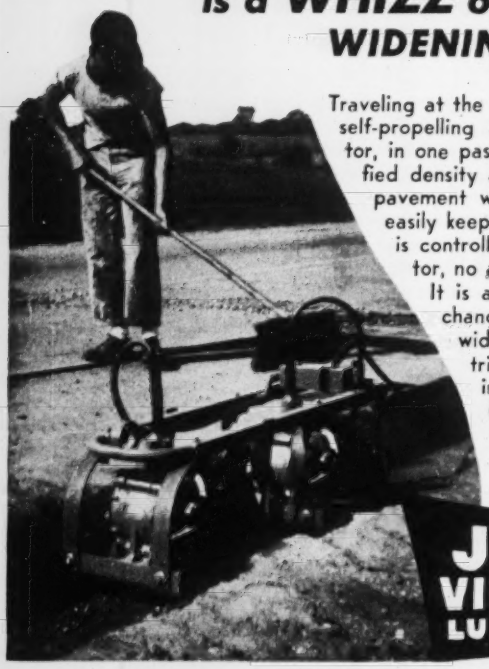

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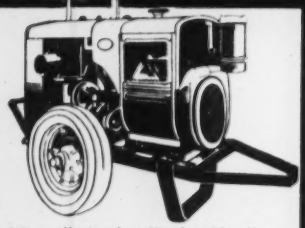

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MUNICIPAL

• **Puget Sound**—Further away is the bridging of Puget Sound and Hood Canal.

The original intention was to prepare plans for the Puget Sound crossing in time to call for bids within the next two years. Proponents of four different locations for the bridge—and inclusion of the Hood Canal crossing—have kept the project from jelling.

It probably will take two more years just to clear up all the preliminaries.

• **Tollway**—The biggest project of the three is the proposed tollway from Tacoma to Everett through Seattle.

This $200-million expressway would be 60 mi long and would provide eight lanes for traffic. It would run through the heart of Seattle.

Construction is far in the future, however, as the report of the study is scheduled to be made to the 1955 legislature.

New York City has problem trying to meet new budget

New York City has its new budget for the fiscal year beginning June 30—but there's one question remaining: Where is the money coming from?

That one important question was the reason for a recent bitter series of verbal battles between city and state officials.

Here's the way the fight went:

• **Transit problem**—Basic difficulty is the city's inability to cope with the expected $50-million operating deficit of the municipal transit system. The simplest solution would be to raise the 10¢-fare—but this is unpalatable to the city's Democratic administration in an election year.

So Mayor Impellitieri went to the state legislature for new taxing powers—sufficient to raise $110 million of the anticipated $173-million budget deficit. The remainder of the deficit would have been made up through economies in the city government.

The Republican state administration—through Governor Dewey—countered with a proposal of its own. Its plan called for setting up a transit authority to run the municipal system—with power to raise fares if necessary. The authority then would become responsible for the transit deficit.

The plan had a hidden club in it: The city won't get additional taxing power unless it accepts the transit authority.

• **Three solutions**—So the city is faced with a choice of three solutions of its financial dilemma:

• The city could accept the entire Dewey program. Then of the $173-million deficit, $50 million would be turned over to the transit authority, $110 million would be raised by new taxes and about $13 million would be saved by economies.

• Accept the transit authority, raise $50 million in new real estate taxes and save $73 million in economies.

• Reject the entire Dewey program and try to save the $173 million by drastic economies.

Charges and counter-charges—directed at disclaiming responsibility for any future far rise and future nuisance taxes—have greeted the Dewey plan and the Impellitieri proposals. One point of agreement: depending on which side is talking, the other is responsible for the city's financial woes.

Toronto suburbs merge with parent city

The city of Toronto, Ont., can now claim the fastest growth for 1953 of any city in North America.

Last week, the city took unto itself 12 suburbs with a consequent population increase of over 500,000. The Municipality of Greater Toronto will now have 1,200,000 people in a 240 sq mi area.

Courts reject slum projects in two southern states

Urban redevelopment was set back in two southern states—Georgia and Florida—when the supreme courts of those two states ruled that the right of eminent domain does not apply to slum clearance programs by private investors.

In its decision the Georgia court indicated that the state's 1937 public housing act specifically calls for public use of land condemned by local governments.

The suit was brought by a property owner in Atlanta who sought to enjoin the city from condemning property he owns in a redevelopment area.

• **Florida decision**—In Florida, the decision had the same end result but the wording was a little different.

The court there found that the housing authority of Daytona Beach did not have the right to take privately owned land that it wanted to clear of slums, redevelop and sell or lease to private enterprise.

"If such a scheme were permitted," the Florida court said, "public authorities would be permitted to take one man's property against his will and make it available to another group for their private purpose."

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The Elis Equipment Co., Inc.

211 N.W. Fourth Oklahoma City, Okla.

PRESTRESSED CONCRETE ROAD at Basildon was one of several built in England for experimental purposes. The slab was cast on waterproof paper, and lengths of pipe were pulled forward as concrete set, leaving holes for inserting prestressing cables. Chair blocks supported the pipe.

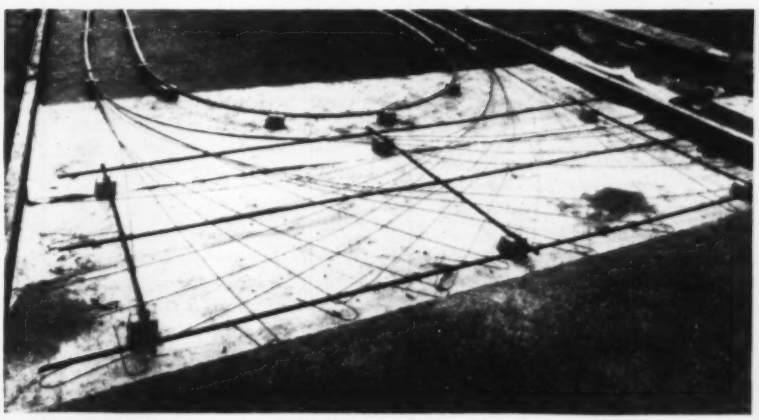
Test post-tensioned highway slabs

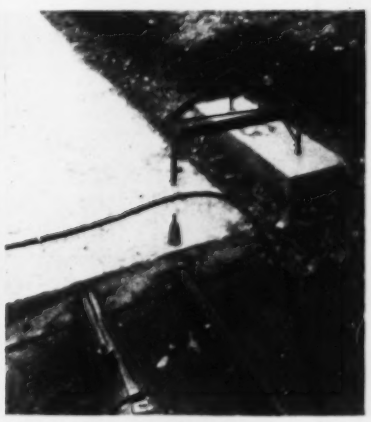
• **Several more** prestressed concrete highway slabs have been tested in England since the first such slab was put down at Crawley (ENR April 12, 1951, p. 37). These new developments were summarized in a paper presented to the American Road Builders Association, by W. P. Andrews of the Cement and Concrete Association of London, England.

Design of conventional concrete roads is based not only on loading and foundation support but also on frictional restraint against dimensional changes of the slab due to temperature and moisture, Mr. Andrews reported. Strains set up by this restraint are often responsible for the cracking of concrete roads. Joints are generally provided at frequent intervals to control cracking, but they are difficult to make and maintain, are weak spots in the road, and impair its riding qualities.

• **Why prestress**—However, if compressive forces are applied to a concrete highway slab with tensioned steel cables, cracks will not occur until the compressive stress in the concrete is overcome by the stresses due to subgrade restraint. Furthermore, prestressing also improves the load-bearing capacity of a slab of given thickness, and consequently a thinner slab can be used for a given loading.

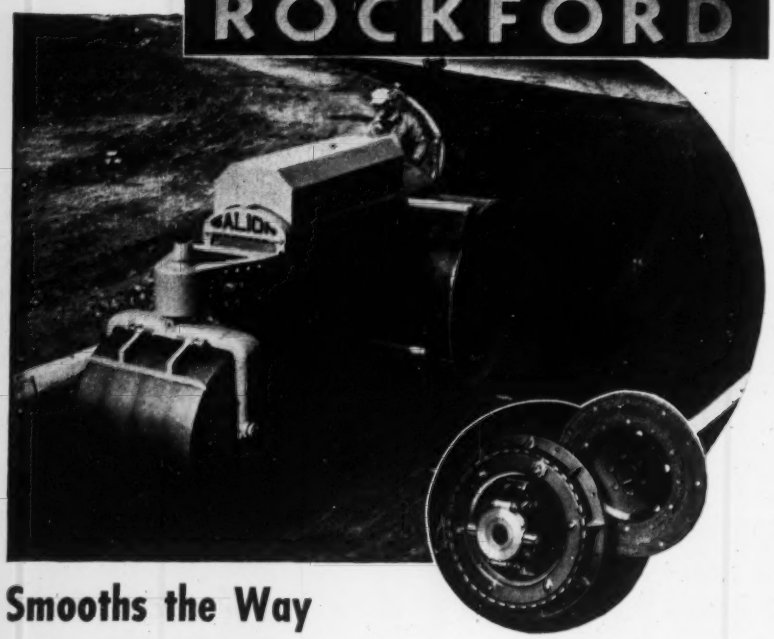
The problem of developing an efficient and durable expansion joint still remains, since prestressed slabs can-





OUTER CABLES were anchored at one end of the test slab, while inner cables looped 180 deg at the same end at Wexham Springs, England. At the opposite end, cables were tensioned (right).

CLUTCHES by ROCKFORD



Smooths the Way To Better Roads

The GALION Three-Wheel ROLLER has to be extra rugged, sturdy and dependable to keep on rolling up profits for it's owners. ROCKFORD CLUTCHES help it serve day-in-and-day-out with minimum maintainance cost, under most severe working conditions. Let ROCKFORD clutch engineers help specify heavy-duty power transmission controls for *your* machines.

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Shows typical installations of ROCKFORD CLUTCHES and POWER TAKE-OFFS. Contains diagrams of unique applications. Furnishes capacity tables, dimensions and complete specifications.

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not be made indefinitely long. The CCA believes that the longest prestressed slab that can be laid economically is 400 ft. Greater lengths would involve wide and costly expansion joints at the ends of slabs. Also more prestressing steel would be required to counteract increased subgrade restraint.

Costs for a 6-in., post-tensioned slab, Mr. Andrews reports, are about the same as for a 6-in. slab reinforced with wire mesh. He considers post-tensioning (prestress applied with unbonded steel anchored at the ends of a slab) more economical than pretensioning (prestress applied through bond). Pretensioning, he explains, requires heavy external anchorages for the jacks applying the prestress.

• **Diagonal tensioning**—At Crawley in 1950, test slabs were laid in two contiguous lanes with post-tensioning cables at 30 deg with the center line and at 7-ft, 6-in. centers. When the road was prestressed, seven cracks that had developed in the concrete closed up, and no further trouble has been experienced from them. In 1949 at Esbly, near the Marne River in France, approximately the same thing had been done, except that the cables were at 45 deg with the center line and at 29-in. centers. In both cases, cables were post-tensioned and anchored with conical wedges (Freyssinet method) in abutments along the sides of the road. This slab also proved satisfactory, but the number of cables and the anchoring operations involved appear to Mr. Andrews to be excessive.

• **Longitudinal tensioning**—The experiences at Esbly and Crawley prompted the CCA to investigate prestressed roads more fully and to try out different methods. CCA believed that practically all the prestress required in road slabs was needed in the longitudinal direction. (Of course, for very wide slabs some transverse prestress, or even simple reinforcement would be advantageous.) Consequently at Wexham Springs CCA built three lengths of road—190 ft, 110 ft, and 130 ft long. Prestress was applied with two cables, of twelve 5-mm. wires each, extending along each side of the slab and with one double-length cable looped around 180 deg at the far end of the slab, where the two outer cables were imbedded in the concrete, with all the stressing done at the other end of the slab, the four cable-ends being anchored there with conical wedges.

• **Sheathing for post-tensioning**—These cables were laid in a metal sheathing,

which is lighter and cheaper than the sheathing used at Crawley. When they were tensioned, it was found that the sheath had been crushed against the cable in the compacting of the concrete. The result was a loss of prestress through friction.

Subsequent experience in forming a hole through the concrete with inflated rubber tubes—for the later insertion of the cables—eliminated that trouble, but the tubes sagged, and there was still frictional loss.

After several experiments finally a method was evolved. As used at Basildon in 1952, it called for formation of a straight hole in the concrete slab by drawing lengths of pipe through the concrete as it set. The position of the holes for the cables was the same as that used for the tests at Wexham Springs, and this time there was no loss of prestress through friction and the slab proved entirely satisfactory.

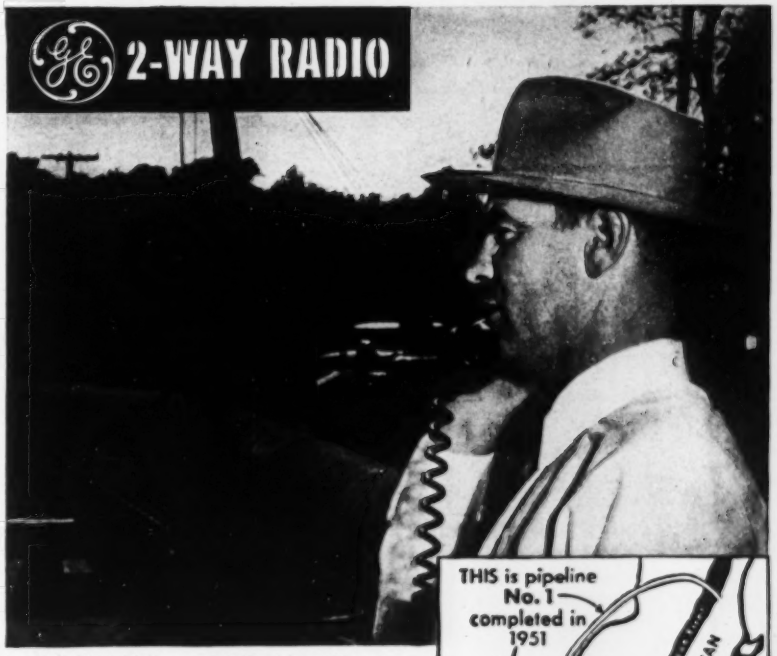
Around curved test slabs at Basildon pipe could not be used for forming holes, instead a heavy steel sheathing was put around the cables before pouring the slab. The cables were not placed parallel to the axis of the slab as they were in the straight slabs, but curved across the axis of the curve in such a way as to hold the slab in compression. In spite of the heavy steel sheaths around the curved cables there was some friction loss.

International briefs . . .

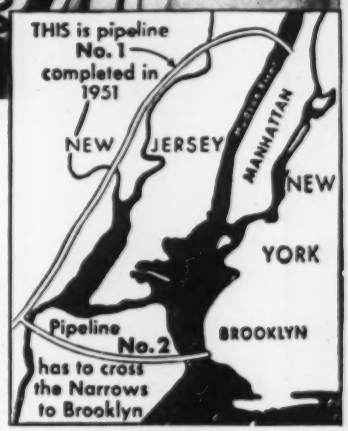
Haitian TVA—Haiti's Artibonite River Valley project is off to a good start with the construction of an irrigation canal from the river to supply a demonstration farm for 100,000 people of the barren Artibonite plain. The biggest job in the 9-year plan (to be completed in 1962), is the construction of a dam and hydroelectric station up the river at Peligre. The dam will conserve the river water (there is no rain there for five months of the year) and produce 40,000 kw for Haiti which has a total of only 20,000 kw now. Knappen-Tippetts-Abbett-McCarthy, New York are consulting engineers.

Investments in Israel—Israel's Minister of commerce and industry, Peretz Bernstein, has extended an invitation to American businessmen to invest in his country's public utilities with the possible grant of concessions for the construction of railways and port facilities. A movement is to improve the dollar exchange rate for foreign investors and to remove rent ceilings to attract building constructors.

How G-E 2-Way Radio Speeded Installation of Longest Permanent Underwater Crossing



Launching Site. R.H. Crowe, Chief Engineer of Transcontinental Gas Pipe Line Corp., receives word that the big pipeline has reached Brooklyn shore.


THIS is pipeline No. 1 completed in 1951
NEW JERSEY
MANHATTAN
NEW YORK
Pipeline No. 2 has to cross the Narrows to Brooklyn
BROOKLYN

Pipeline Bridges 6,600-Foot Gap from Staten Island to Brooklyn, N. Y.

DETAILED planning to coordinate work crews and equipment activity was a must before Collins Construction Co. of Houston, Texas, tackled the Narrows operation for Transcontinental Gas Pipe Line Corporation. Collins is widely respected for engineering "know-how" and keen anticipation of all emergencies. When the hauling cable broke on the last section, *instant contact* with key personnel helped retrieve the auxiliary cable quickly.

Good communications equipment plays an increasingly important role in every job. You can depend on G-E units to get instructions to work crews fast, order supplies in a second, co-ordinate equipment and the overall job activity.

For complete information on how to solve your communications problem, call the CAS* man at a local G-E office or write: *General Electric Co., Section 2243-23, Electronics Park, Syracuse, N. Y.*

**Communications Advisory Service*

River Patrol. G-E radio keeps headquarters in range for Bobby Gates, Gates Brothers Marine Service, on patrol near pipeline launching area.

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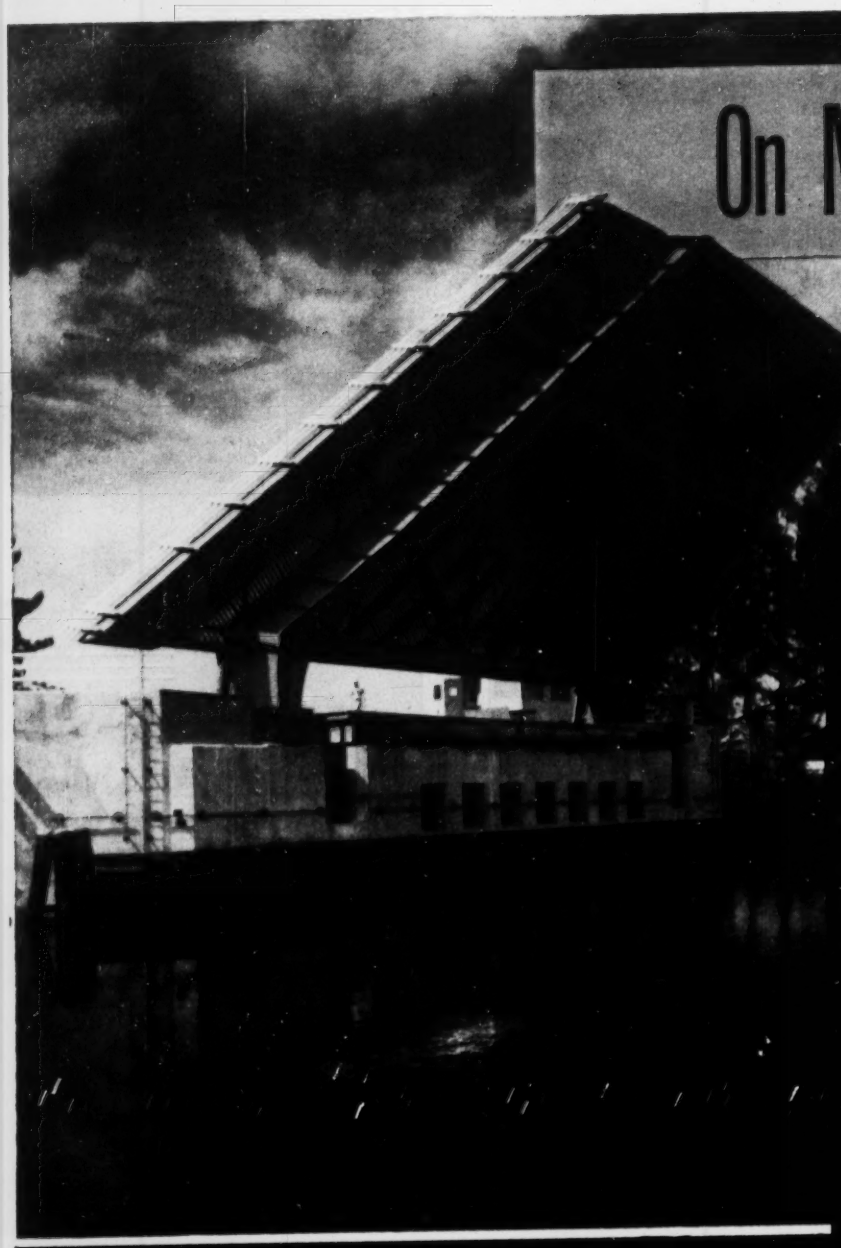
On Miami's Two



Photographs show S.E. 4th Avenue bridge over Miami Canal, in Miami, Florida. This is one of two similar single-leaf skew bascule structures recently completed in the southern city. They are the 2nd and 3rd applications of their type in this country.

Approximately 67 tons of 5" U·S·S I-BEAM-LOK open flooring were used on the two bridges.

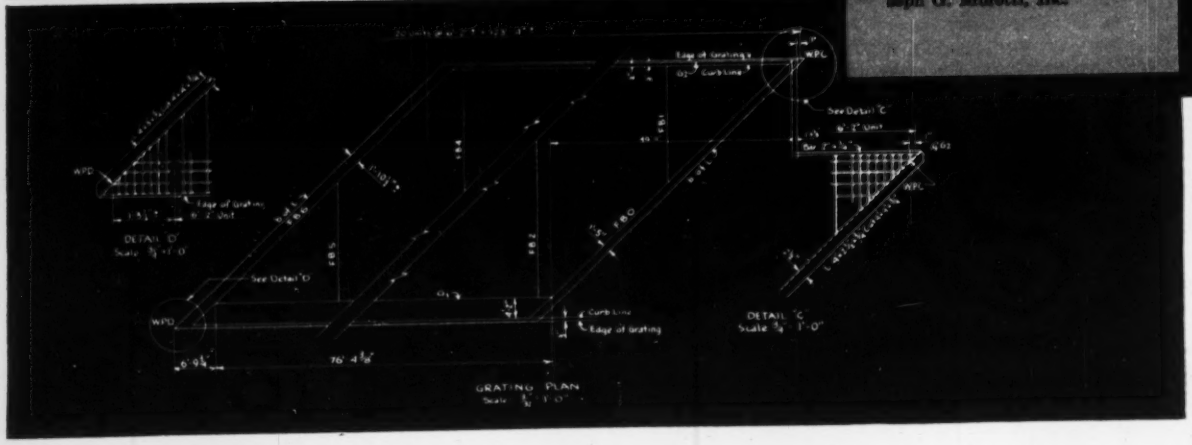
Use of skew single-leaf bascule design, rather than conventional double-leaf square bascule, reduced construction cost $80,000 per bridge.

OWNER: Dade County Board of County Commissioners.

Constructed under the supervision of County Engineer R. A. Anderson, Assistant County Engineer Herbert S. Saffir, Resident Engineer H. C. Thurston.

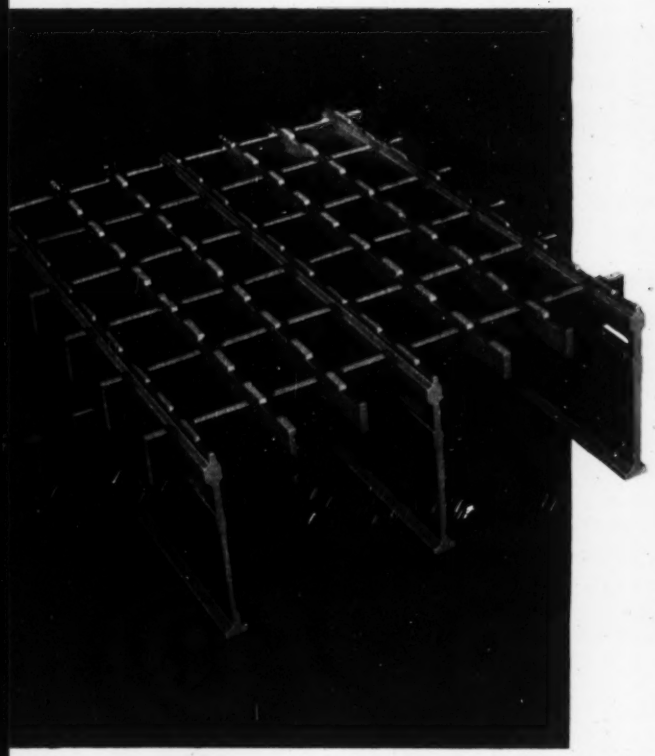
CONSULTING ENGINEERS: Rader Engineering Company, and Hardesty & Hanover.

GENERAL CONTRACTOR: Joseph G. Morotti, Inc.



Skew Bascule Bridges...

U·S·S I-BEAM-LOK saves 272 tons of flooring deadweight



THE two movable bridges recently completed over the Miami Canal at S.E. 4th Avenue and N.W. 36th Street, in Miami, Florida, are the second and third structures of this type in the country.

Both bridges are similar single-leaf bascule structures with 44-ft. roadways. Each crosses the canal at an angle of 45 degrees to maintain a straight alignment for both roads across the water.

The Hanover skew bascule design which exactly fits the channel, eliminated waste span length and offered the least obstruction to navigation. And by avoiding the usual double-leaf type of structure, resulted in substantial savings.

Contributing to this economy was the use of 7,056 sq. ft. of U·S·S I-Beam-Lok open steel flooring.

On the basis that 5″ I-Beam-Lok weighs 18.8 lbs. psf., compared with 96 lbs. psf. for a conventional 8″ slab of concrete, the weight savings on the flooring alone for these two bridges amounted to approximately 272 tons!

Available in units measuring 6′-2″ in width and up to 49′ in length, this lightweight all-steel open flooring with its strong, full 5″ depth can be applied directly to stringer on spans up to 4′ centers to permit H-20 loadings. It does not require secondary supports.

To find out more about U·S·S I-Beam-Lok Open Flooring, contact the sales office nearest you. Our engineers are ready now to discuss its many advantages with you.

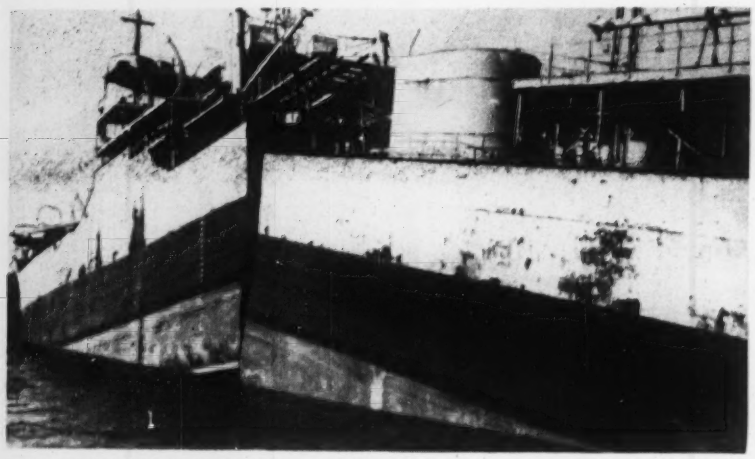
U·S·S SHEET PILING ALSO USED ON THESE PROJECTS—Approximately 125 tons of sheet piling were used in the cofferdam construction for the bascule pier and the rest pier on both bridges. 6,340 sq. ft. of sheet piling remained in place on the S.E. 4th Avenue bridge after the piers were completed; and 6,050 sq. ft. remained in place on the N.W. 36th Street bridge.

UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S I-BEAM-LOK

3-818

UNITED STATES STEEL



TEN TANKERS AND THREE LIBERTY SHIPS have broken in two in the last nine years, two completely, and 25 other vessels have suffered total fractures of the strength deck or the bottom plate.

Study of failures in welded ships provides new design criteria

A REPORT on the major causes of structural failures in welded ships—in particular the critical role of certain properties of steel—has been issued by the Metallurgy and Mechanics Division of the National Bureau of Standards.

The NBS metallurgy laboratory examined samples from nearly 100 ships in which fractures have occurred, and tests have been completed on 126 plates selected from 65 of these ships.

• **Tension test not decisive**—Tension tests indicated that the fractured plates met the specification requirements—elongating under load more than 20% in 8 in., with a cross sectional reduction of about 50%—but the fractures themselves showed very little plastic deformation or ductility. The fractures were of a brittle type leaving a coarse granular break nearly perpendicular to the plate surface. Chevron markings in the fractures of most of the plates examined were found always pointing back to the origin of the fracture.

This phenomenon of a brittle break in a plastic metal is similar to that observed in notch brittleness tests of notched specimens in tension of bending, particularly at low temperatures, and most of the ship fractures occurred at low temperatures. The chemical analyses of the NBS investigations showed that steel notch sensitivity increases with increasing amounts of carbon and phosphorus and decreases with finer grain size and increasing amounts of silicon and manganese.

• **Structural breaks**—The source of a number of the fractures was found in the shell plate at the end of a longitudinal stiffener, within a few inches of a transverse bulkhead. The longitudinal stiffener, welded to the shell plating, is interrupted for a space of about 6 in. to allow for insertion of the transverse bulkhead. Gusset plates on the flanges of this longitudinal are welded to the bulkhead at a point several inches from the shell plate. The abrupt end of the longitudinal stiffener constitutes a structural notch, analogous to a notch used in the notch brittleness tests. Such discontinuities nearly always produce some concentration of stress in the area in which they occur, which seriously reduces the ability of the structure to absorb energy of deformation.

This condition is repeated more than 100 times in the structure of a tanker. If a crack starts, it may propagate across the welds from one plate to the next, since the welded structure is continuous. The result is complete structural failure.

• **Design tests**—The NBS laboratory tested three general designs of the longitudinal stiffener interrupted by a bulkhead. The first design was relatively rigid; it may be seen in Fig. 2. The second design tested was relatively flexible due to the removal of a semi-circular cutout of the steel at the end of the stiffener web on either side of the bulkhead. (This performed best.) The third design is like the first but reduces the stress by increasing the shell plate thickness at the point of highest stress (The shell plate is at the back of the longitudinal stiffener in Fig. 2).

Results of the NBS tests indicate that the load-carrying ability of the interrupted longitudinal designs does not vary greatly and probably is adequate for the purpose intended. In view of this, the structure which is capable of greater deformation—and therefore able to absorb a relatively large amount of energy before fracture—is most suitable for this type of service. Addition of material near regions of high stress or removal of material to eliminate abrupt changes of section and to improve flexibility are beneficial.

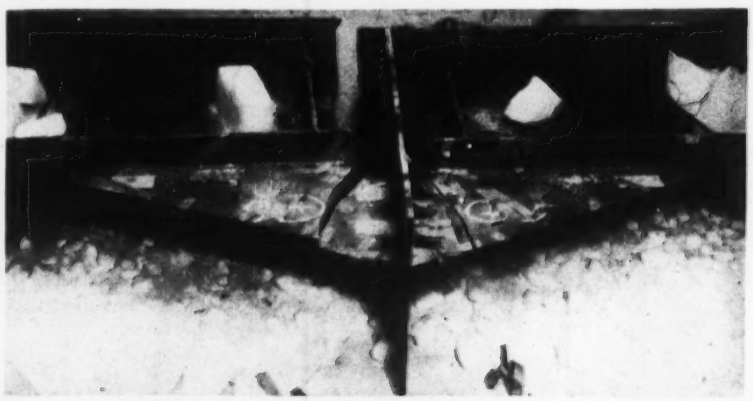
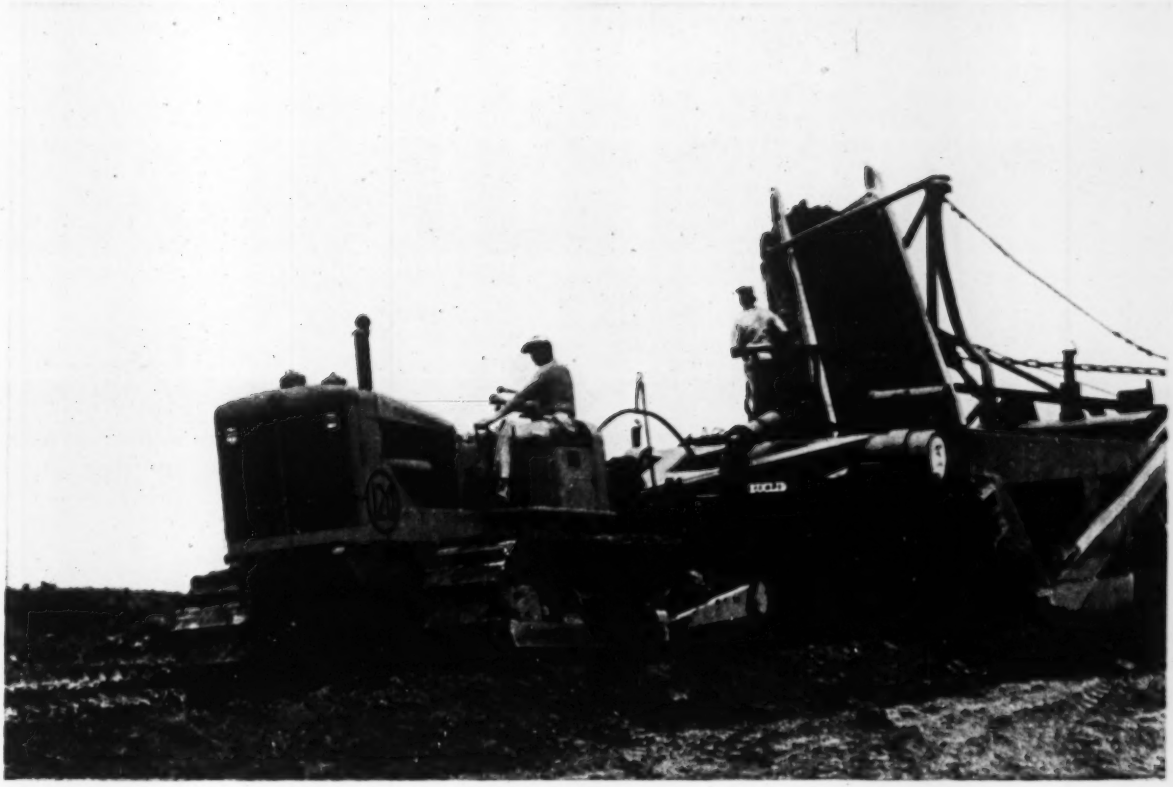


Fig. 2—FAILURE of interrupted longitudinal specimens occurs more frequently at low temperatures. The bulkhead interruption in this laboratory test constitutes a structural notch in the welded longitudinal and the metal fails as in a notch brittleness test.

SWITCH TO GM DIESEL



HERE'S WHY IT GETS WORK DONE FASTER!

IF SIX MEN all tugged on a rope at once, they could pull more than if only three tugged and three rested. That's the way the General Motors 2-cycle Diesel engine in this tractor works. *Every* cylinder produces power *every* revolution of the crankshaft—*twice* as many power strokes per crankshaft revolution as in 4-cycle Diesels.

This GM Diesel feature helps give construction equipment the ability to get work done faster. In Allis-Chalmers' HD-9's and HD-15's, for example, when tough going has reduced travel speed 40% the tractor will have *increased* drawbar pull almost 20% over rated pull. Travel speed has to drop 45% before drawbar pull even begins to fall off. The tractor ties into a load faster and "hangs on" to it longer. *This means more work done, more dirt moved every shift!*

This is another way of telling you why more and more contractors are switching to GM Diesel-powered equipment to speed production and cut costs. GM Diesels are available in more than 750 models of equipment built by 150 different manufacturers. It will pay you to specify GM Diesel power for your machines.

Single Engines . . . 16 to 275 H. P. Multiple Units . . . Up to 850 H. P.

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Exactly right power, correctly applied at the point of action, is the Heiliner solution for greater earthmoving efficiency and production at low cost. Heiliner's "power with a purpose" *utilizes* horsepower instead of wastes it . . . and horsepower saved by more efficient design cuts costs on every phase of the cycle.

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This is the simplest type of forced ejection known. The floor of the bowl is hinged back of the cutting blade and simply tilts up to a 75° angle by means of a positive ram action. The load is forced out the wide front opening, while even the stickiest material is scoured from the sides and stationary back of the bowl. Material is dumped fast and clean. There's no leftover yardage to haul back to the pit.

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Big pay loads mean big profit! Both 13-yd. and 18-yd. Heiliners often carry *more* than the rated capacity, and the more yards you can haul each trip, the less it costs per yard.

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Big, powerful Heiliners handle as easily as the finest car with power steering. With Heil's exclusive, patented Hydro-Steer there's no jack-knifing, no nosing, no snaking. Operators have the "feel" of every operation through the sensitive steering mechanism.

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As a double-utility investment, you can't beat the combination of Heiliner two-wheel tractor with interchangeable wagon and scraper. With a 13-yd. scraper and a 15-yd. bottom dump wagon, the 500 Heiliner does the same efficient work, on a smaller scale, performed by the 800 Heiliner's 18-yd. scraper and 20-yd. wagon.

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For faster loading, dirt "boils" up in the *center* of the bowl, heaping front and back evenly in a short digging distance. Haul speed is a fast 25 miles per hour. Big, safe 4-wheel brakes give complete control, empty or loaded. Heil's famous planetary drive provides a low-torque drive for complete utilization of engine horsepower.

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Double the utility of your Heiliner with an Interchangeable Bottom Dump Wagon

For roadbuilding, mine stripping, heavy construction, or any earthmoving job where big production of shovel loaded material is a factor, you can double the utility of your Heiliner 800 prime mover by using both the Heiliner scraper and the Heiliner dump wagon *interchangeably.* From every standpoint . . . big capacity, high operating efficiency, rugged construction, low-cost operation and maintenance . . . your investment in these easily interchangeable units will pay big dividends. You can bid confidently on more different types of work and handle them at a profit, without a big investment in other pieces of equipment.

Get complete information about Heiliner interchangeable units before you start your next contract . . . see your Heil distributor for details about Heiliner Wagons.

Heiliner 800 two-wheel tractor and 20-cu. yd. Bottom Dump Wagon. Extra heavy-duty wagon has fool-proof clam type doors which open fast and clean, with the unit moving or standing. There's no bogging down, because doors don't drop below hopper body level.

R-4

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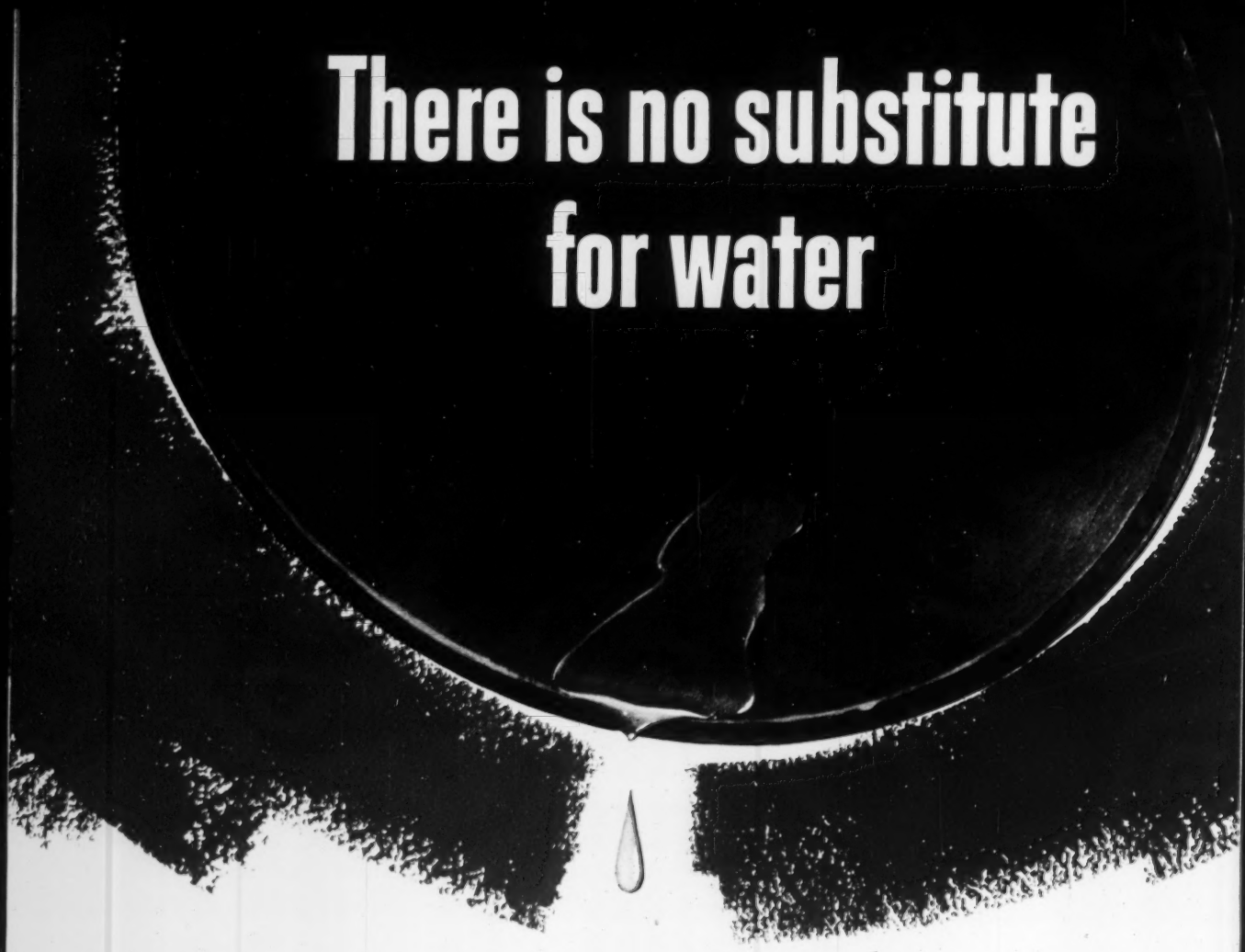
There is no substitute for water



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Nothing has ever taken the place of water among the basic needs of man. And nothing will ever take the place of safe, sure, *experienced* engineering in developing a dependable water supply.

Layne's reputation as the world's most experienced developer of well water systems was earned by engineering skill every step of the way—from on-the-spot geological surveys to the precision designing of each pump for its particular job. For the best in well water systems, there is no substitute for Layne engineering.

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Layne Associate Companies Throughout the World

Arkansas lures Texas highway engineer with $15,000-a-year highway job

The state of Arkansas is seriously concerned about roads. It has just hired a director for its highway department at $15,000 a year—the highest salary ever appropriated for a state employee in Arkansas. The governor of the state gets only $10,000.

The new director is Herbert Eldridge, 57, who has been getting $8,600 as chief planning engineer of the Texas highway department, the No. 2 spot. According to Raymond Orr, chairman of the Arkansas highway commission, Eldridge's appointment to the highway position came by accident.

• **Borrowed**—This spring, when Arkansas asked the Texas highway department to lend it a consultant, to survey state highways, Eldridge got the assignment. He came to Arkansas last month and spent a week visiting the district field offices.

After getting back to Texas, he wrote a report with recommendations for the Arkansas highway commission. The Arkansas commissioners were so impressed with his insight into the state's road problems that they asked Dewitt Greer, director of Texas highways, if they could ask Eldridge to come to Arkansas permanently. Orr says that if the Arkansas legislature had not granted the Commission's request for a $15,000 salary for Eldridge, "we couldn't have obtained this man."

• **Bidding**—Eldridge expects to take over his Arkansas job on May 1 "or earlier—just as soon as I can get released in Texas." The Texas state legislature now has a proposal before it to boost his present salary to $10,000.

Eldridge has served in a good many different jobs in the Texas highway department. For the past 17 years, he has also served on one committee or another of the American Association of State Highway Officials.

Concrete pipe man retires

C. M. Howard (picture, below) is retiring after 24 years as engineer-manager of the Concrete Products Association of Washington. Howard started with the association back in 1929, when the concrete pipe industry was in its infancy. Generally recognized as an authority on the subject, he's now serving on ASTM Committee C-13, reviewing specifications for concrete pipe. He has also been a member of the Technical Problems Committee of the American Concrete Pipe Association.

HERBERT ELDRIDGE—as highway director gets more pay than the governor.

C. M. HOWARD—retires after 24 years with concrete pipe makers' group.

PILE FOUNDATIONS

Provides the information required for the design, driving, and maintenance of pile foundations. Covers the relations between borings, soil mechanics, and pile foundations; the most effective methods for determining pile capacities from driving resistances and friction values; the selection of rigs; the factors affecting choice of pile type, etc.

One chapter supplies over 50 actual cases of pile foundation failures, with causes, methods of prevention, and remedies. **By Robert D. Chellis, Structural Eng'r., Stone & Webster Corp. 640 pages, 254 illus., $14.00.**

INDUSTRIAL WASTE TREATMENT

A practical guide for plant owners, managers, and engineers concerned with the problem of dealing with industrial wastes. Covers the important legal aspects of stream pollution, tells how to secure samples and data, and how to develop and test a method of treatment. Discusses factors of plant design and construction to minimize pollution, and the techniques of reclaiming by-products from industrial wastes. By **E. B. Besselievre, Chief Sanitary Engineer, Foreign Div., The Dorr Co., Engineers. 365 pages, 100 illus., $7.50.**

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A helpful reference manual that can save you time, trouble, and money. It helps you ward off costly lawsuits by showing you—before you become involved—different types of legal troubles likely to occur in connection with construction work. It reviews and discusses 46 most common problems involved in the performance of a construction contract—indicates clearly how you can eliminate obstacles in your own construction relations. **By I. Vernon Werbin, Member, New York Bar. 227 pages, $5.00.**

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The Record and Potential

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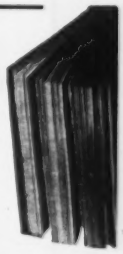

A comprehensive study of the construction industry and its economic problems, seeking causes and cures of fluctuation. Describes the industry . . . how it operates . . . gives data and analysis showing the possibilities for stability. **By Miles L. Colean and Robinson Newcomb. Committee for Economic Development Research Studies. 327 pages, 12 illus., $6.00.**

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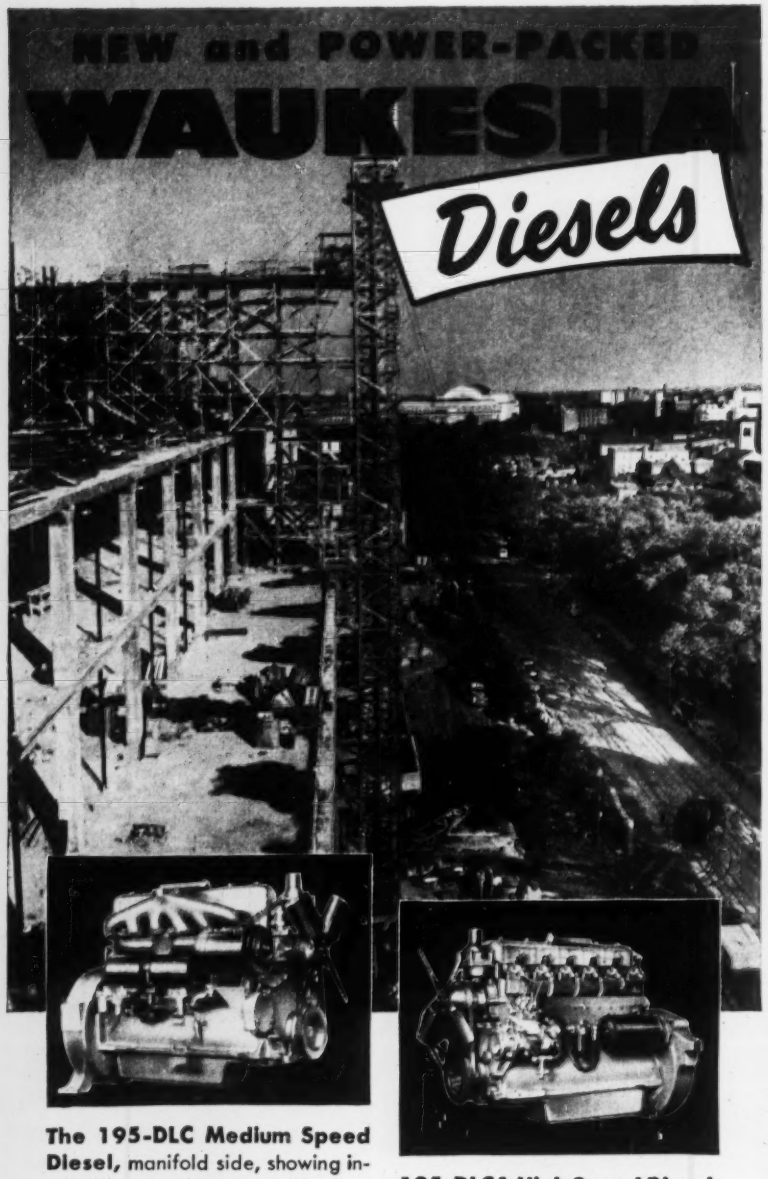

The 195-DLC Medium Speed Diesel, manifold side, showing intake and up-exhaust manifolding; waste-packed lubricating oil filters; 12-volt pivot-mounted belt-driven generator; fuel supply pump; water pump by-pass, and foot-type flywheel housing.

195-DLCA High Speed Diesel, injection side, with pump mounted governor and fuel supply pump, fuel filter, water pump, single orifice pintle-type nozzles, drawn steel injection tubing of uniform length, 12-volt starting motor, vibration dampner, arm-type flywheel housing.

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208

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MEN AND JOBS

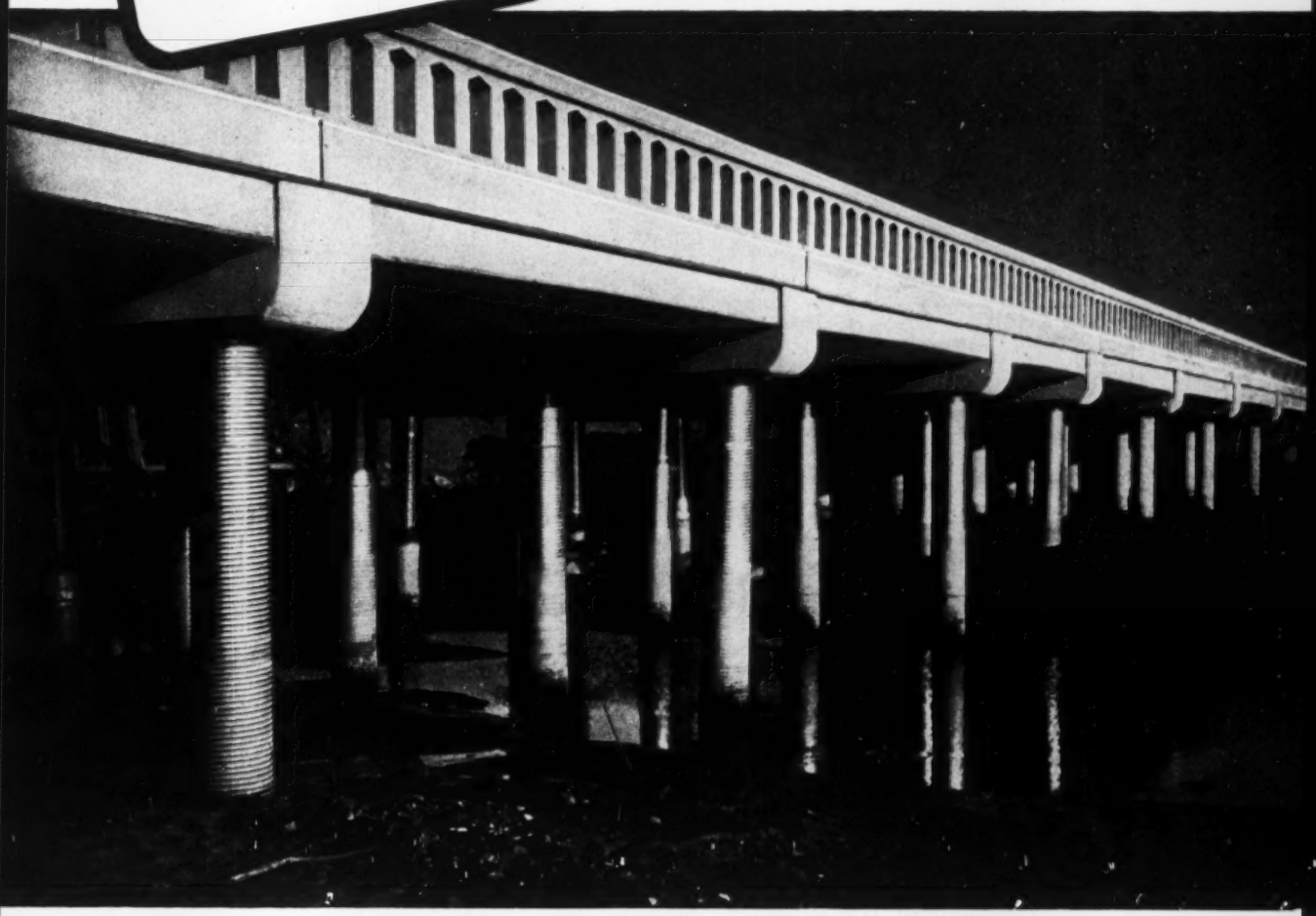
Careers . . .

• **Appointed**—**Edwin A. Pasha** has been made vice-president in charge of the industrial and building construction division of Merritt-Chapman & Scott Corp. . . . Builders Structural Steel Corp. has appointed **Walter Schneider** as contract manager of its fabrication division . . . **Col. Emil F. Klinke** has been assigned as assistant director of the department of engineering at the U. S. Army Engineer School . . . **John W. Johnson** is leaving the Buffalo Sewer Authority to become general manager of Brunner Asphalt & Construction, Inc. . . . **Col. W. D. Milne** has been named district engineer at Louisville, Ky. . . . **George J. Brown** has become chief design engineer of J. Ray McDermott & Co., Inc., Harvey, La., where he will supervise design of off-shore drilling structures in the Gulf of Mexico . . . **Col. Lavonne E. Cox** has been named district engineer at Tullahoma, Tenn. . . . **F. Laurence Burnett,** a senior engineer with Federal Power Commission, was chosen chief engineer of the Grand River Dam Authority, in Okla.

• **Local government appointments**—**Bernard A. Lefeve** has been made permanent director of the bureau of highway planning, New York State Department of Public Works, at $12,283 a year . . . In a reshuffle of the Washington, D. C., Department of Sanitary Engineering, **David V. Auld** gets the $12,000-a-year top job; **Ralph E. Fuhrman** becomes his assistant at $10,800 . . . **Henry D. Harral** becomes deputy commissioner of the Philadelphia Streets Department, in charge of sanitation. Pay: $10,000 . . . **Allan E. Gifford** becomes personnel director of the Massachusetts Department of Public Works at $7,500 a year . . . **Samuel S. Lewis** has been named Pennsylvania's Secretary of Forests and Waters.

• **Elected**—The Building Officials Conference of America has elected: **Arthur J. Benline,** president; **William G. Wharton,** first vice-president; **Arthur N. Rutherford,** second vice-president; **Norman G. Friske,** treasurer, and **Paul E. Baseler,** secretary . . . **Anton J. Winkler** has been elected president of the Master Builders Association of Wisconsin . . . **Cornelius M. Shannahan** is director-secretary of the Building Contractors' and Mason Builders' Association of Greater New York, Inc. . . . **D. L. Cheney** has been elected to his third consecutive term of president of the Alaska Chapter, AGC.

completed ...another bridge on RAYMOND piles



Constructed for State of California Department of Public Works, Division of Highways.

spanning the South Channel Sweetwater River between National City and Chula Vista, California is this 332-foot long highway bridge supported by Raymond piles. It has a 28-foot wide roadway and is of reinforced concrete construction with concrete caps resting directly on the Raymond piles—another example of the important role Raymond is playing in the constant development of the highways of America.

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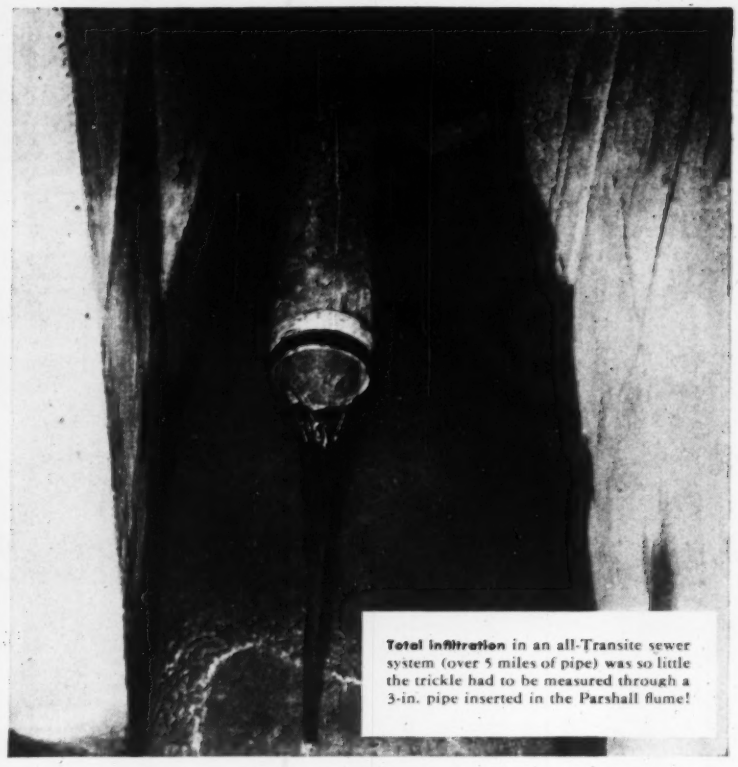

Total infiltration in an all-Transite sewer system (over 5 miles of pipe) was so little the trickle had to be measured through a 3-in. pipe inserted in the Parshall flume!

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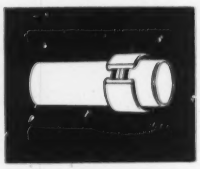
For example, on one recently installed Ring-Tite System using 28,540 feet of Transite Sewer Pipe, in diameters of 6 through 18 inches, the infiltration per inch of diameter, per hour, per mile of pipe came to a mere 0.85 gal. This low infiltration (including that from manholes and connections to house sewers) was achieved despite the fact that a considerable portion of this installation was below the prevailing ground water table. (For specification purposes, an infiltration allowance of 10 gallons per inch of diameter, per hour, per mile of pipe may be used with Transite Sewer Pipe.)

Obviously, such minimum ground-water infiltration helps reduce the load on treatment plants, cuts down on treatment costs, and conserves plant capacity for future expansion needs. This reduced infiltration plus Transite's high flow capacity (Manning's N-.010) often permits the use of smaller diameter pipe for new installations.

For further information on how this Ring-Tite Joint, used with corrosion resistant asbestos-cement Transite Pipe can help reduce your sewage costs, write Johns-Manville, Box 60, New York 16, N. Y. Ask for folder TR-103A.

Why the RING-TITE JOINT cuts your sewage costs



Two rubber rings and Transite Sleeve (cutaway) can be assembled quickly over Transite Pipe ends to make a pressure-tight joint. These flexible joints effectively absorb vibration, help compensate for soil movements.

TIGHT ALL THE WAY

Johns-Manville Transite Building Sewer Pipe assures a tight sewer system throughout. Many municipal officials are insisting that house and building connections to their sewage lines be made with Johns-Manville Building Sewer Pipe to assure tightness throughout their systems. This pipe also has the rubber ring sealed joint that is shown above.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville TRANSITE SEWER PIPE

OBITUARIES

William P. Brandes, 68, a retired construction engineer, died April 8 at Doylestown, Pa. Mr. Brandes, who lived in Tinicum, Pa., was at one time with the Empire Construction Co. in Baltimore, and then later joined the G. W. Rogers Construction Co. of New York City. He retired as vice-president of the latter firm five years ago.

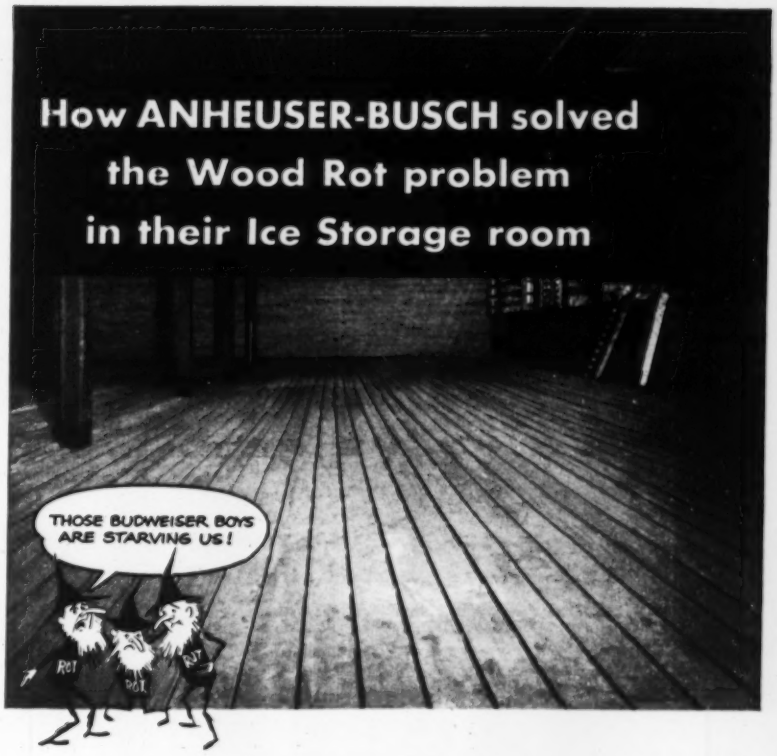
Robert S. Covington, 43, N. C. State Highway Department engineer at Wilmington, for the last nine years, died April 9.

Ralph W. O'Neill, 72, former mayor of Youngstown, Ohio, died April 9 in Columbus. He was in the construction industry throughout his life, having formed his own firm in 1922. In 1931 he became Lucas County sanitary engineer in Toledo, and became a PWA engineer in 1935, serving in various Ohio cities until in 1938 he went to Youngstown as chief engineering inspector for WPA for Mahoning, Trumbull, and Columbiana counties. Two years later he became Youngstown city engineer, serving four years.

W. Zode Smith, 78, retired general manager of the Atlanta, Ga., water works, with which he had been associated for 57 years, died April 9 at Atlantic Beach, Fla.

Charles Frederick Dallas, 72, dean of Cuban engineers, native of Knoxville, Tenn., and graduate of University of Tennessee, died April 10 at Havana. He was president and owner of the Antillion Construction Co. and general manager of General Concrete and Fabricating Co., both of Cuba. He had been in Cuba 38 years.

Lt. Col. John H. Weller, 69, Clearwater, Fla., a civil engineer who aided in the construction of the Panama Canal, died April 4 at Tampa, Fla. He was retired from his last position as production manager of the Barber Asphalt Co., Philadelphia. Colonel Weller, a civilian Army engineer at the time, was instrumental in developing wide gage railroads of 60 in to be used in the Canal Zone. He saw service in Panama from 1908 to 1913. The steam locomotives which he developed were vital in speeding the movement of thousands of tons of material to the construction project. During the First World War he worked as a resource development engineer at Trinidad. In 1940 he was commissioned a major in the Army.



• In 1937, Anheuser-Busch Incorporated faced a problem common to all companies who operate cold storage rooms. They had to reline an ice storage room with a material which would have the same insulating properties as wood and would resist rotting and deterioration when alternately wet and dry.

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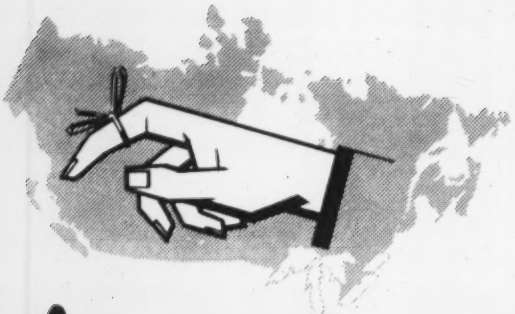

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save time, money and costly weather delays by using pre-cast concrete columns, beams, roof slabs and wall panels. We manufacture and supply a wide variety of these light-weight units—including Flexicore*, Channel Slab and H-M Conduit Floor*. Write for complete details.

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OBITUARIES

Henry D. Hall, 53, civil engineer for E. I. du Pont de Nemours and Co., Inc., died at Richmond, Va., April 10. He was a C.E. graduate of George Washington University and had been with du Pont for the last 18 years.

C. A. Mockmore, 61, head of the Department of Civil Engineering at Oregon State College since 1933 and a staff member since 1921, died April 11. He was graduated from the University of Iowa in 1920, and received his doctorate in 1935. During World War I he served in the Corps of Engineers. He was a member of the Willamette Valley, Ore., Project Committee and vice-president of the Oregon State Board of Engineering Examiners.

William B. Kiker, 67, president of Kiker and Younts, Reidsville, N. C., highway construction firm, died April 11. He received C.E. degree from Trinity College (now Duke U.) in 1909.

Thomas Giordano, 75, a retired road contractor, died at Rahway, N. J., April 13.

Wm. J. Foley, Sr., 71, formerly supervisor of bridges for Union County, N. J. for 37 years, died at Elizabeth, N. J., April 12.

Frederick E. Bronson, 66, a member of the Federal District Commission of Ottawa, Ont., died April 14 at Atlantic City, N. J.

John Falk Rothchild, 42, contractor, died April 2 in Mountain Home, Idaho. He was formerly a partner in Humphrey-Ketchen Construction Co., Boise, Idaho. Rothchild attended University of Washington and George Washington University.

Strength of materials to be studied

A special summer program on "Advanced Strength of Materials" will be given at the Massachusetts Institute of Technology from July 6 to 17. It will be of special value for structural engineers and teachers.

The topics will include: Review of the general methods of strength of materials with applications to beams, shafts, disks, plates, and shells; stresses and deflections of thin-walled structures with and without stiffeners; buckling and elastic stability; effects of large deformations.

For application blanks write: Director of the Summer Session, Room 3-107 M.I.T., Cambridge 39, Mass.

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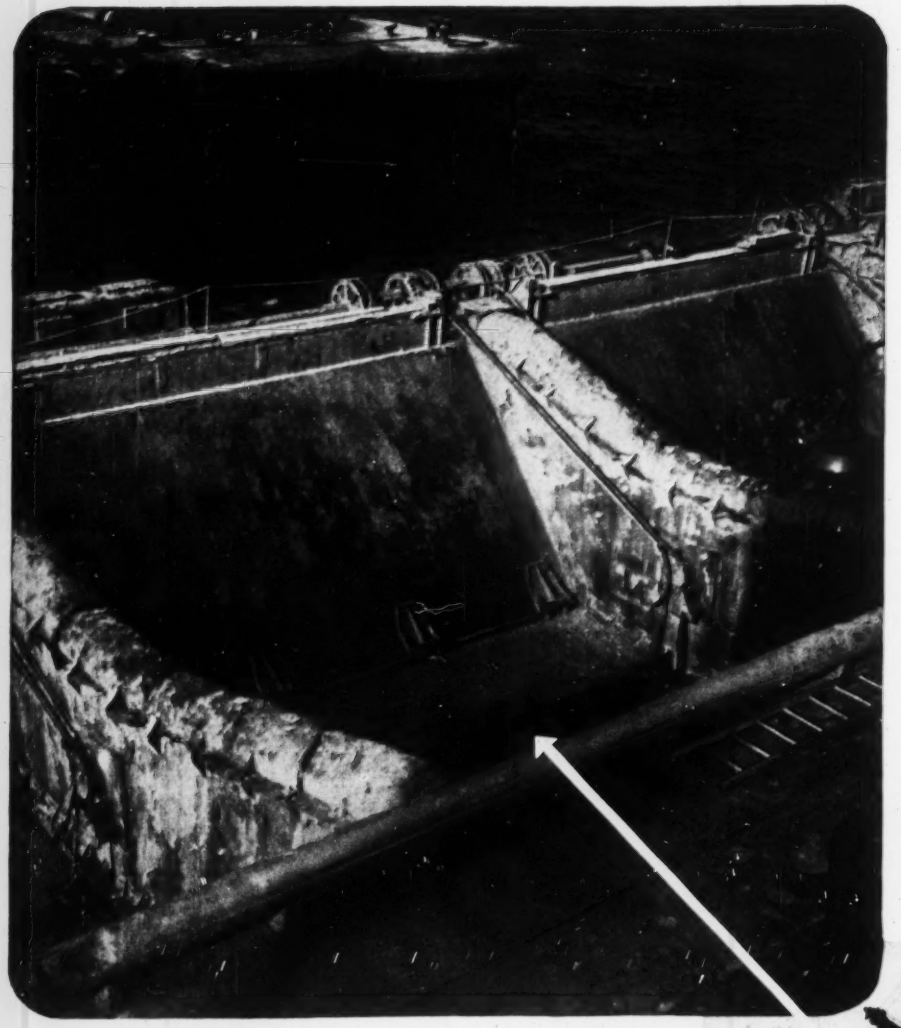
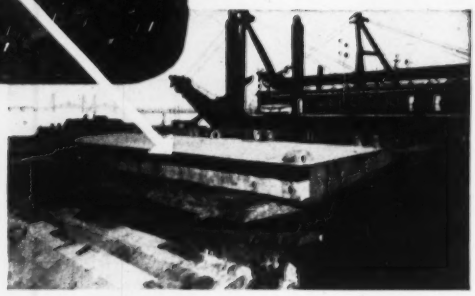


Barge Discharge Doors with bottom edges made of Neoprene rubber.

Black strip on this barge door is the Neoprene rubber edge. Length of edge is 23 feet, the thickness is 5½".



Rock, pipe, cinders and other refuse gave the wooden discharge doors on this barge a hard time ...wearing out their edges. When the doors closed on this hard debris, they often were splintered or broken.

After studying the problem, United States Rubber Company engineers installed rubber edges on the discharge doors. These edges *form around* any hard pieces of material, and then return to shape when the doors are opened. These edges *bend*, instead of wear or break. There is no seepage in or out of doors.

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BOOKS

CALCIUM CHLORIDE IN CONCRETE, Bibliography 13, Highway Research Board, Washington 25, D. C.

PREFABRICATED HOME INDUSTRY SURVEY—Prefabricated Home Manufacturers' Institute, 908 20th Street N.W., Washington 6, D. C.

A SURVEY OF HOUSING RESEARCH IN THE UNITED STATES—Housing and Home Finance Agency, Washington 25, D. C. $3.00.

PARKWAY FOR THE MISSISSIPPI—Part II (Technical), A Report to the Congress by the Bureau of Public Roads and the National Park Service, Washington 25, D. C.

THE ROAD AHEAD—An Outline of Maryland's Highway Needs—and How They Can Be Met: Maryland State Road Commission, Baltimore, Maryland.

THE NATURE OF THE AIR POLUTION PROBLEM IN THE CITY OF NEW HAVEN—Available from Eric W. Mood, Directory, Bureau of Environmental Sanitation, Department of Health, City Hall, New Haven, Conn.

ONE HUNDRED YEARS OF ENGINEERING PROGRESS WITH WOOD—Proceedings of Wood Symposium, The Centennial of Engineering Convocation, Timber Engineering Co., Washington 6, D. C.

METHODS FOR TREATING METAL-FINISHING WASTES—Prepared by the Metal Finishing Industry Action Committee of the Ohio River Valley Water Sanitation Commission, 414 Walnut Street, Cincinnati 2, Ohio.

1953 LONG-TERM CAPITAL IMPROVEMENT PROGRAM—Publication No. 76, Maryland State Planning Commission, 100 Equitable Building, Baltimore 2, Md. 50¢.

BEACH PROTECTION IN FLORIDA—Water Survey & Research Paper No. 8, Division of Water Survey & Research, State of Florida, Tallahassee, Fla.

A RECOMMENDED HIGHWAY IMPROVEMENT PROGRAM FOR THE WASHINGTON METROPOLITAN AREA—Volume IV, Washington Metropolitan Area Transportation Study, Department of Highways, District of Columbia, Washington 4, D. C.

CALIFORNIA STATE HIGHWAYS—An Engineering Study of Improvements Required to Serve Present and Future Travel—Prepared by the Automotive Safety Foundation, 700 Hill Bldg., Washington 6, D. C.

BETTER ROADS FOR NORTH DAKOTA—Engineering Analysis and Recommendations. Prepared by the Automotive Safety Foundation, 700 Hill Bldg., Washington 6, D. C.

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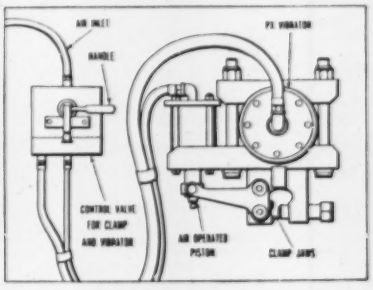
Tunnel lining contractors now use VIBER external vibration on movable steel forms to speed production of denser, more uniform concrete and a finished surface almost as perfect as the form itself. This gives maximum capacity with minimum frictional losses in diversion tunnels, storm drains, or other water-carrying structures. Generally one vibrator is clamped on each side of the steel form (which transmits the vibration) at a height convenient for clamping and moving as work progresses. One USBR project engineer reported transmission of vibration "throughout length of the slope—20 to 25 feet." Vibrators clamped near upper end of the advancing slope may be turned on briefly to help settling while concrete is deposited, after which a vibrating time of ten to forty seconds, depending on conditions, will consolidate it and produce the surface required.



AIR-OPERATED MOUNTING CLAMP and operating valve provide a quick and convenient means of clamping the external vibrator on the form wherever a plate or angle is accessible. Valve (left) turns the vibrator on and off, and operates the air piston to provide a clamping force of 1800 pounds on the adjustable jaws.

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Save Up to 50% on Rope Costs When Tuffy Takes Over

From his records of yardage and service life, this Nebraska construction company owner discovered that Tuffy Scraper Rope was giving him almost twice the service of a second rope he was using!

This meant that he could save nearly 50% on scraper rope costs by switching to Tuffy Scraper Rope!

Time after time, reports like this one show that Tuffy is paying off for thousands of other users in the construction field. And there's a good reason why: Tuffy Scraper is *specially made* to stand up under the strains and stresses imposed by wheeled scrapers . . . it's *not* just a standard rope. Tuffy is tailored to take greater drum crushing abuse, angle pulls through swivel mounted sheaves, crawling on flanges of guide rolls and edges of sheave housing.

Tuffy Scraper is *flexible* to withstand sharp bends over small drums and hug sheave grooves. Yet Tuffy has the *stiffness* needed to resist looping and kinking when slack! See for yourself how Tuffy pays off in longer runs and lower cost. When you order just ask for:

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How Many Length

_____ inch in diameter.

*Name Furnished on Request.

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Says

Owner of Middlewestern Construction Company*, Speaking of *Tuffy* Scraper Rope.

Road construction puts extra strains and stresses on scraper ropes that ordinary wire ropes can't take. Tuffy Scraper Rope is specially made for use on wheel scrapers.

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A specially constructed ½" rope for tough dozer service. Mount a 150' reel just back of the wedge socket. Feed only enough through to replace the damaged part on the drum. Cut wastage of undamaged rope—cut down time one-half. Users report savings up to 300%.

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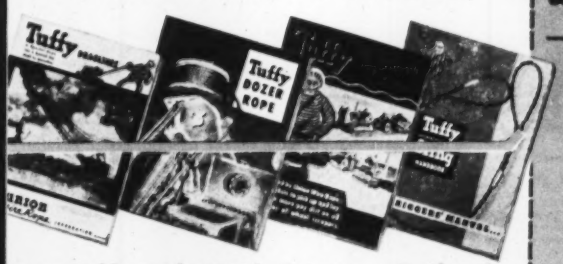

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y
ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Mass., Hingham**—B.A. 4/30—Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, installing water mains, U. S. Naval Ammunition Depot, NOY 77767, Spec. 36702. Plans deposit $10.

BIDS ASKED—BUILDINGS

▲ **Conn., Meriden**—HOUSING—B.A. 4/30—City Housing Auth., 7 Gale Terrace, MR-52, moderate rental housing, off Chamberlain Hy., incl. plant and site imprvs. $1,500,000. Plans deposit $50. Louis R. Fucito, 141 S. Elm St., Waterbury, Conn., archt. CD 3/31/52.

Vt., Bellows Falls—HOSPITAL—B.A. 5/5—Rockingham Hospital Assoc., Westminster Terrace, hospital addn., alterations. $650,000. Plans deposit $50. James H. Ritchie & Assoc., 135 Clarendon St., Boston, Mass., archts. CD 11/11.

▲ **Conn., West Hartford**—SCHOOL—B.A. 5/8—Town, Bd. Educ., Dr. E. H. Throne, supt. Schools, 51 Memorial Rd., school addn., alterations, South Quaker Lane. $1,630,000. Plans deposit $50. Sherwood F. Jeter Jr. & Assoc., 36 Pearl St., Hartford, archts. CD 5/21/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

CONNECTICUT—State Hy. Comn., State Office Bldg. Hartford.

M. A. Gammino Constr. Co., 728 Valley St., Providence, R.I., CA, $656,692, c. conc. eastbound roadway of Wilbur Cross Hy., Rte. 15, Fed. Aid Proj. FI-130 (25), Union Bids Mar. 16, awarded Apr. 1. CD 324, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

M. J. Walsh & Sons, Inc., 14 Shawmut Ave., Holyoke, Mass. LB $998,721. City HOSPITAL Lower Westfield Rd., Proj. M255-46 (C), HOLYOKE, MASS. City, Dpt. P. Wks., City Hall, Holyoke, Mass. Bids Apr. 10. CD 3/24.

Town, Ralph Martin, supt. Schools, Medway, Mass. rejected bids Mar. 28, elementary school, Legion Field area, MEDWAY, MASS. LB $778,240. CD 4/3, under LB.

▲ **Land Assets Corp.**, Emerald Rd., Springfield, Mass. Owner Builds. $1,200,000. 150 RESIDENCES, Allen St., SPRINGFIELD, MASS. Burton E. Geckler, 145 State St., Springfield, Mass., archt.

▲ **E. & F. Constr. Co.**, 94 Wells St., Bridgeport, Conn., CA, $1,679,000, Conn. MR 40 Beardsley Terrace HOUSING extension, BRIDGEPORT, CONN. City of Bridgeport Housing Auth., 2525 Hallett St., Bridgeport, Conn. Bids Apr. 12. CD 4/8.

George L. Hickey, Inc., 13 Spring St., Stamford, Conn., CA. $937,890, elementary SCHOOL, Fairfield Woods Area, FAIRFIELD, CONN. Town, School Bldg. Comn., City Hall, Fairfield, Conn. Bids Mar. 17, awarded Apr. 3. CD 3/25, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

† **Del., Dover**—HEATING PLANT—B.A. On Or About 5/20—U. S. Eng., 121 N. Broad St., Phila., 1, Pa., central heating plant, distr. sys., Dover Air Force Base, Inv. No. ENG-36-109-53-424. Bids Nov. 21 rejected. CD 10/29/52.

BIDS ASKED—BUILDINGS

▲† **Md., Fort George G. Meade**—BARRACKS—B.A. 4/30—U. S. Eng., 24 St. and Maryland Ave., Baltimore, N.S.A. Constr. Proj. Barracks, Eng-18-020-53-61. $3,500,000. Plans deposit $50. CD 3/30.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Frazier-Davis Constr. Co.**, 1319 Macklind St., St. Louis 10, Mo., CA. $2,991,000, vertical lift bridge carrying S. Park Ave. over Buffalo River, BUFFALO, N. Y. Dpt. P. Wks., City Hall, Buffalo, N. Y. Bids Jan. 15, awarded Apr. 7. CD 1/26, under LB.

▲ **NEW JERSEY**—New Jersey Hy. Auth., State Hy. Dpt. Office Bldg., 1035 Parkway Ave., Trenton.

Merritt-Chapman & Scott Corp., 260 Madison Ave., New York 16, N. Y., LB. $1,957,673, combined bid. Bass River Bridge substructure in Bass River Twp., Garden State Parkway, Contr. No. 73, Section 10, Burlington Co., and Mullica River Bridge Substructure from Bass River Twp. to Galloway Twp. Atlantic City, Garden State Parkway, Contr. 74, Sect. 10, Atlantic Co.;

Brann & Stuart, Broad St. Station Bldg., Phila., Pa., LB. $1,381,464, for Mullica River Bridge substructure Contract 74, Section 10, Atlantic Co.;

Union Bldg. & Constr. Co., 631 Main Ave., Passaic, N. J., LB. $689,610, Bass River Bridge substructure, Contract 73, Section 10, Burlington Co. Bids Apr. 9. CD 3/24.

▲ **NEW JERSEY**—New Jersey Hy. Auth., State Hy. Dpt. Office Bldg., 1035 Parkway Ave., Trenton,

George M. Brewster Son, Inc., 275 W. Fort Lee Rd., Bogota, N. J., LB. $2,093,394, grading, drainage, paving 4½ mi. Garden State Parkway, Contract 27, Section 7, from West Front St., Twp. of Middletown to Holland Rd. Twp. of Holmdel, Monmouth Co.;

Davis Constr. Corp., Charlotte Ave., Hicksville, N. Y., LB. $676,797, grading, drainage, 5.8 mi. Garden State Parkway, Contract No. 24, Section 10, from Westecunk Creek to Old Shore Rd., in Twps. of Stafford and Eagleswood, Ocean Co. Bids Apr. 9. CD 3/24.

† **Morris & Cumings Dredging Co. Inc.**, 44 Whitehall St., New York, 4, N. Y., CA, $488,444, dredging Newark Bay, Hackensack and Passaic Rivers, CIVENG 30-075-53-46, NEW JERSEY, U. S. Eng., 80 Lafayette St., New York, 13, N. Y. Bids Mar. 12. CD 2/25.

Dravo Corp., Contg. Div., Dravo Bldg., Pittsburgh, Pa., CA. barge harbor imprvs., incl. installing 25 steel sheet pile cells, two at 26 ft. each diam. to provide foundations for an unloading crane and coal hopper, on Allegheny River, HARMARVILLE, PA. Harmar Coal Co., Harmarville, Pa.

▲ **Baltimore Contractors, Inc.**, 711 S. Central Ave., Baltimore, Md., LB, $1,204,869, Contract No. 1, substructure;

De Luca Davis Constr. Co., 1968 Belair St. Baltimore, 13, Md., LB, $2,219,900, Contract 2, superstructure East Capital Bridge over Kingman Lake and Anacostia River on E. Capitol St. Extension, WASH., D. C. D. C. Government, Director of Hys. 499 Pa. Ave. N. W., Wash., D. C. Bids Apr. 9.

▲ **Peter Kiewit Sons Co.**, 59 and Grays Ave., Phila., Pa., LB, $1,109,020, constr. Sect. 2 of East Branch Piney Branch Trunk Sewer, 14 and Randolph Sts., N. W., WASH., D. C. Govt. of Dist. of Columbia, Director of Santiary Eng., District Bldg. 14 and E Sts. N. W., Wash., D. C. Bids Apr. 8. CD 3/30.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Millard Shroder, Inc.**, 369 Lexington Ave., New York 17, N. Y. CA. $1,000,000. 14 story APARTMENT for 130 families, Third Ave. and 35 St. NEW YORK, N. Y. Senville Realty Corp., c/o Schuman & Lichtenstein, archt., 369 Lexington Ave., New York 17, N. Y.

▲ **Wilaka Constr. Co.**, 11 E. 44 St., New York 17, N. Y. CA. $6,464,000, general constr.;

Afgo Eng. Corp., 475 Adelphi St., Brooklyn 17, N. Y. CA. heating for 2 disturbed PATIENTS bldgs., Creedmoor State Hospital, QUEENS VILLAGE, N. Y. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Mar. 19, awarded Apr. 1. CD 3/24 under LB.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **Va., Little Creek**—ELECTRICAL FACILITIES—B.A. 4/28—P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, electrical facilities alterations in various bldgs. at U. S. Naval Amphibious Base, NOY 77159, Spec. 37636. Plans deposit $10. CD 3/27.

† **Va., South Charleston**—B.A. 4/28—Dist. P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, 11, Va., river bank stabilization at U. S. Naval Ordnance Plant, NOY 75730, Spec. 46497. Plans deposit $10.

† **Louisiana**—B.A. 4/29—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, 3,180 square concrete slope pavement on Mississippi River levees, Plaquemines Parish, Inv. 53-199. CD 6/26/46.

La., Convent—B.A. 5/6—St. James Parish Police Jury, Convent, 334,100 cu. yd. channel excav. and 47 acres clearing,

† **S. C., Fort Jackson**—B.A. 5/6—U. S. Eng., Custom House Charleston, rehabilitation of water treatment filter beds, No. 38-081-53-25. CD 4/1.

† **Tennessee, Arkansas and Mississippi**—B.A. 5/13—U. S. Eng., P.O. Box 97, Memphis 1, Tenn., placing approx. 32,000 squares (area of 100 sq. ft.) 5 in. uncompacted asphalt pavement on previously graded banks, at several localities on banks of Mississippi River between Memphis, Tenn. (Mile 732 AHP) and Henrico, Ark. (Mile 600 AHP), Inv. Serial No. CIVENG-40-041-53-129.

BIDS ASKED—BUILDINGS

Ga., Atlanta—CHURCH—B.A. 4/28—Beecher Hills Baptist Church, 2430 Beecher Rd. S. W., church addn. $300,000. Plans deposit $50. A. Thomas Bradbury, 60 5 St. N. E., Atlanta, archt.

N. C., Burlington—B.A. 4/29—City, Negro High School. $400,000. Plans deposit $50. Watson & Hart, 1001 E. Bessemer Ave., Greensboro, archts. CD 11/28/52.

Ga., Blakely—SCHOOLS—B.A. 5/6—Early Co. Bd. Educ. Blakely, Washington Elementary-High School and Blakeley-Union Elementary High School. Plans deposit $50 each. Rayburn S. Webb, 300 Broad Ave., Albany, Ga., archt. CD 8/26.

▲ **Ga., Macon**—HOSPITAL—B.A. 6/1—City, hospital $4,000,000. Associated Hospital Architects, First Natl. Bank Bldg., archts. CD 3/11/52.

SOON LETS CONTRACT—BUILDINGS

Fla., Orlando—WAREHOUSE-OFFICE—Allen's Drug Co., c/o Raymond C. Stevens, archt., 1920 N. Orange Ave., soon lets contract warehouse-office $300,000.

Miss., Picayune—HOSPITAL—Lucius O. Crosby Memorial Hospital, Picayune, soon lets contract hospital, $800,000. N. W. Overstreet & Assoc., 201 N. Lamar St., Jackson, archts. CD 11/1/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **WEST VIRGINIA**—State Road Comn., Charleston.

U. S. Steel Corp., American Bridge Co. 525 Wm. Penn. Place, Pittsburgh, Pa., CA $3,153,795, steel superstructure for highway bridge Ohio River Wheeling Island to Ninth St. steel, concrete piers, Wheeling, Ohio Co.

▲ † **J. A. Jones Constr. Co.**, 209 W. 4 St., Charlotte, N. C., CA. $1,311,694. maintenance hangar, Charleston Air Force Base., Inv. 53-15, CHARLESTON, S. C. U. S. Eng., Customhouse, Charleston, S. C. Bids Feb. 17. CD 2/20, under LB.

Young Constr. Co., Rock Hill, S. C., CA $112,274, street imprvs., ROCK HILL, S. C. City, City Hall, Rock Hill, S. C. Bids Mar. 31. CD 3/26.

▲ † **Ivey Bros. Constr. Co.**, 3224 Peachtree Rd., Atlanta, Ga., CA. $1,099,754. maintenance hangar at Shaw Air Force Base, ENG 38-081 53-14, SUMTER, S. C. U. S. Eng., Customhouse, Charleston, S. C. Bids Jan. 29. CD 2/3 under LB.

† **Georgia-Southern Constr. Co.**, Macon, Ga., LB, $770,020, headquarters bldg., Robins Air Force Base, Inv. 53-31, MACON, GA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids Apr. 7. CD 4/2.

▲† **Ballenger Paving Co.**, P. O. Box 927, Greenville, S. C., LB, $2,713,923, aircraft parking apron, etc., Hunter Air Force Base, Inv. 53-521, SAVANNAH, GA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids Apr. 8.

Slade & McElroy, Inc., P.O. Box 758, Gulfport, Miss. CA $155,500. natural gas sys., FULTON, MISS. City, Fulton, Miss. CD 3/25, under LB.

LOUISIANA—State Hy. Dpt., Highway Office Bldg., Baton Rouge.

R. P. Farnsworth & Co., Inc., 1815 S. Salcedo St., New Orleans, La. CA $785,140. bit. surf. on approaches combination concrete slab spans, concrete girder spans,

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McKISSICK
Super Champion
SNATCH BLOCK
For super duty on loads up to 40 tons.

Drop Forged, heat treated swivel hook, or swivel shackle.

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vertical slab spans, six 36 ft. concrete girder spans, two 36 ft. tower spans and one 150 ft. vertical lift span bridge 0.264 mi. Algiers Cutoff Canal Bridge, State Rte. 1509, S.P. 835-08-06, Orleans Parish. CD 3/26 under LB.

Barnet Bresner, 2833 Lee St., Alexandria, La. Own Forces. $178,500. television station, ALEXANDRIA, LA. CD 2/26.

▲† **T. L. James & Co., Inc.,** Box 531, Ruston, La. and **W. R. Aldrich & Co.,** 2493 Baywood Ave., Baton Rouge, La. CA $2,253,799. addnl. aprons, taxiways, apron grid duct sys., Lake Charles Air Force Base, Eng. 41-243-53-104, LAKE CHARLES, LA. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Mar. 20, awarded Apr. 8. CD 3/26, under LB.

▲† **McAlister-Davis Co.,** 833 State St., Pine Bluff, Ark. CA $1,392,500. revetment at various locations on banks of Mississippi River between Wickliffe, Ky. and Richardson Lansing, Tenn., KENTUCKY and TENNESSEE. U.S. Eng., P.O. Box 97, Memphis 1, Tenn. CD 4/1, under LB.

Henry Bickel Co., Chestnut St., Louisville, Ky. LB $769,551. Contr. 160, Upper Dry Run Sewer Sect. B, LOUISVILLE, KY. Metropolitan Sewer Dist., 414 W. Jefferson St., Louisville, Ky. and Jefferson County Sewer Dist., Court House, Louisville, Ky. Bids Apr. 10. CD 4/1.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Larchmont Constr. Corp.,** 1073 W. Broad St., Falls Church, Va., Owner Builds. $1,000,000. 3 story brick, concrete masonry 126 APARTMENT units, ARLINGTON, VA. CD 1/12.

English Constr. Co., Altavista, Va., CA, $875,000. Halifax TRAINING SCHOOL, HALIFAX, VA. Halifax County School Bd., Halifax, Va. Bids Mar. 12. CD 3/24, under LB.

▲ **H. L. Coble Constr. Co.,** Greensboro, N. C., CA. $1,000,000 MILL BLDGS. 6 and 7, ASHEBORO, N. C. Burlington Mills, Asheboro, N. C.

† **J. A. Jones Constr. Co.,** 209 W. 4 St., Charlotte, N. C. CA $735,579. HEATING PLANT, Inv. 53-16, FORT BRAGG, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Apr. 2.

Gilbert & Cooper, P.O. Box 986, Augusta, Ga., CA Approx. $325,000. MOTOR COURT, AIKEN, S. C. W. W. Walker & E. J. Roschuni, c/o F. Arthur Hazard, archt., Marion Bldg., Augusta, Ga. Bids Apr. 1. CD 3/25.

T. C. Brittain Co., Decatur, Ga., CA. $444,500, HIGH SCHOOL, INMAN, S. C. Spartanburg Co. School Dist. 4, Court House, Spartanburg, S. C. Bids Mar. 30.

▲ **Richard L. Parker,** 304 Ponce De Leon Ave., Atlanta, Ga., Owner Builds, $1,000,000, 110 RESIDENCES, ATLANTA, GA.

Hugh I. Richardson, 830 W. Peachtree St., Atlanta, Ga., Owner Builds. $350,000. OFFICE, ATLANTA, GA., for Carrier Corp., 300 Ivey St., N.E., Atlanta, Ga.

Graham-Spicard Co., c/o John W. Cherry, archt., 1429 Peachtree Rd., N.E., Atlanta, Ga., Owner Builds. $312,000, APARTMENT UNITS, ATLANTA, GA.

▲ **Sylvan Byck,** 3710 Abercorn St., Savannah, Ga., Owner Builds, $1,500,000, 83 RESIDENCES, SAVANNAH, GA.

▲ **Daniel Constr. Co.,** 429 N. Main St., Greenville, S.C., CA, $7,000,000, thread MILL, TOCCOA, GA. Coats & Clark Inc., Toccoa, Ga. J. E. Sirrine Co., 215 Main St., Greenville, S. C., engr. CD 4/10, under CA.

▲ **Algernon Blair,** P. O. Box 749, Montgomery, Ala., Owner Builds, $2,000,000, 200 RESIDENCES, JACKSONVILLE, FLA.

Ellis-Thompson Constr. Co., 901 N. Fremont Ave., Tampa, Fla., CA, $125,000, Distributing PLANT and WAREHOUSE, ST. PETERSBURG, FLA. Borden Co., 114 2 St. S., St. Petersburg, Fla.

S. J. Curry & Co., Albany, Ga., CA, $586,317, SCIENCE BLDG., for Florida A & M College, TALLAHASSEE, FLA. State Bd. Control, Education Bldg., Florida State University, Tallahassee, Fla. Bids Mar. 31. CD 4/10, under LB.

Bear Constr. Co., 222 W. Pensacola St., Tallahassee, Fla. CA, $545,435, Westcott HALL addn., at Florida State University, TALLAHASSEE, FLA. State Bd. Control Education Bldg., Florida State University, Tallahassee, Fla. CD 4/10, under LB.

J. F. Holley Co., 905 6 Ave. N., Birmingham, Ala., LB, $600,000, electrode mfg. PLANT, MONTEVALLO, ALA. Westinghouse Electric Corp., P.O. Box 2278, Pittsburgh, Pa. Bids Mar. 31. CD 4/1.

Rode Building Materials Co., Greenville, Miss. Owner Builds. $800,000. 85 RESIDENCES, GREENVILLE, MISS.

J. E. Pyle, P.O. Box 1679, Little Rock, Ark. LB $322,019. employees' DORMITORY at Mississippi State Hospital, WHITFIELD, MISS. State Bldg. Comm., Woolfolk State Office Bldg., Jackson, Miss. Bids Apr. 6. CD 3/23.

Malcolm A. Coco, American Bank Bldg., New Orleans, La. Owner Builds. $340,000. 17 RESIDENCES, NEW ORLEANS, LA.

Sal Bivalacqua, 3906 Iroquois St., New Orleans, La. Owner Builds. $425,000. 20 RESIDENCES, NEW ORLEANS, LA.

Hargett Constr. Co., 113 Walton Ave., Lexington, Ky., CA $653,892. 6 fraternity HOUSES for University of Kentucky, LEXINGTON, KY. State, State Office Bldg., Frankfort, Ky. Bids Apr. 2, awarded Apr. 7. CD 4/7, under LB.

▲ **Struck Constr. Co.,** N. Clay St., Louisville, Ky. CA Approx. $1,500,000. 4 story, brick, rein.-con. FACTORY, LOUISVILLE, KY. Brown & Williamson Tobacco Co., 1600 W. Hill St., Louisville, Ky. O. P. Ward, Washington Bldg., Louisville 2, Ky., archt. Awarded Apr. 6.

W. A. Catlett Constr. Co., 3601 Chapman Hy. S.W., Knoxville, Tenn., LB $343,343, HIGH SCHOOL PHYSICAL EDUCATION BLDG., ALOCA, TENN. City, Alcoa, Tenn. Bids Apr. 6.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **O., Toledo**—ROAD HARDSTAND—B.A. 4/30—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., constr. road and hardstand, Rossford Ordnance Depot, Serial No. ENG. 46-022-53-40. CD 4/1.

† **O., Dayton**—RADIO FACILITY—B.A. 5/6—U. S. Eng., 830 W. Broadway, Louisville 3, Ky., constr. UHF radio air ground facility, Wright-Patterson Air Force Base, Serial No. ENG 15-029-53-47. Plans deposit $15. CD 9/27/51.

BIDS ASKED—BUILDINGS

▲ **O., Cleveland Heights**—SCHOOL—B.A. 5/12—Cleveland Heights Bd. Educ., 1749 Lee Rd., Junior High School, Miramar Blvd., incl. gymn. and cafeteria to be known as Frank L. Wiley Junior High at University Heights. $1,000,000 first unit, $600,000 later. Plans deposit $50. Spahn & Barnes, 1940 Lee Rd., archts. CD 5/16/52.

SOON LETS CONTRACT—BUILDINGS

Ind., Indianapolis—DEVELOPMENT and CONTROL—Eli Lilly & Co., 740 S. Alabama St., soon lets contract 4 story, brick, limestone development and control bldg., Norwood and Alabama Sts., tunnel under Norwood and overhead enclosed bridge on 3rd floor level, to connect with adjoining bldg. $750,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Hunkin-Conkey Constr. Co.,** 1740 E. 12 St., Cleveland 14, O., LB $5,188,058, est. $6,000,000. aeration and sludge settling tanks, supporting bldgs. and appurtenances at southerly sewage disposal plant, Cuyahoga Heights, CLEVELAND, O. City, City Hall, Cleveland 14, O. Bids Mar. 27. CD 3/16.

▲ **INDIANA AND KENTUCKY**—Indiana Toll Bridge Comm., Indiana State House, Indianapolis 4, Ind.,
All previous action relative to bids rescinded due to dispute over the bids, steel, concrete bridge over Ohio River, Indiana to Kentucky, Lawrenceburg, Ind., Dearborn Co. $6,000,000. Will re-advertise. CD 1/15, under CA.

Kenny Constr. Co., 111 W. Washington St., Chicago, 2, Ill., LB, $799,657, storm sewer Congress Expressway Main Drain Central to Cicero Aves., CHICAGO, ILL. Cook Co. County Bldg., Chicago, 2, Ill. Bids Apr. 7.

▲ **Robert R. Anderson Co.,** 4550 W. Patterson St., Chicago, Ill., LB, $1,036,048, paving Congress St. Expressway from 12 to 1 Aves., Maywood.

Peter J. Crowley, Maywood, Ill., LB, $814,846, paving Congress Expressway from 21 Ave. to 12 Ave., Maywood.

Arcole Midwest Corp., 3225 Main St., Evanston, Ill., LB, $1,327,402, paving Congressway from Addison Creek Bridge to 21 Ave., Bellwood.

Leininger Constr. Co., 30 N. La Salle St., Chicago, 2, Ill., LB, $132,056, paving Ridgeland and Narragansett Aves. from Roosevelt Rd. to Grand Ave., Chicago.

Gallagher Asphalt Co., 131 St. and Indiana Ave., Thornton, Ill., LB, $94,067, pavement 127 St. from 80 Ave. to Rte. 83 near Chicago, CHICAGO, ILL. Cook County, County Bldg., Chicago 2, Ill. Bids Apr. 7.

▲ **Mahoney Constr. Co.** 2300 N. Grand River, Lansing, Mich.; CA, 91 mi. nine line;

Anderson Bros., 707 N. Drennan St., Houston, Tex., CA, 190 mi. nine line;

Bechtel Corp., 220 Bush St., San Francisco, Calif., CA, 75 mi. pipe line;

Conves Constr. Corp., 2884 San Pablo Ave., San Pablo, Calif. CA, 171 mi. pipe line;

Merritt-Chapman & Scott Corp., 1646 Standard Bldg., Cleveland, O. CA, constr. 21,000 ft. Straits of Mackinac water crossing, one of world's deepest underwater crossings;

W. J. Meagher & Son, 1300 S. Water St., Bay City, Mich., CA, 2,500 ft. underwater crossing of Saginaw River near Bay City, Mich.;

Midwestern Constr. Corp., 105 N. Boulder St., Tulsa, Okla., CA, 2,500 ft. underwater crossing of St. Clair River at international border south of Port Huron, WISCONSIN and MICHIGAN Bechtel Corp., awarded contracts for Lakehead Pipeline Co. subsidiary of Interprovincial Pipe Line Co., subsidiary Imperial Oil Co., Princess St., Toronto, Ont. CD 4/8, under CA. ONTARIO, WISCONSIN-MINNESOTA.

▲ **WISCONSIN**—State Hy. Comm., State Hy. Office Bldg., Madison,

Koch Constr. Co., 239 W. Center St., Milwaukee 12, Wis. CA, $514,597, c. conc. 7.292 mi. Contr. 1, South County Line-Old U.S.H. 41 Rd., U.S. Hy. 41, Proj. F 03-1 (11), Fond du Lac Co.;

J. R. Griffith Co., P.O. Box 58, Racine, Wis., CA, $761,318, Contr. 1, c. conc. 5.263 mi. U.S. Hy. 141, Knellsville-North County Line, (South Section) Rd., Proj. F 01-3 (17), Ozaukee Co.;

Jos. D. Bonness, Inc., 1409 N. 17 St., Milwaukee 8, Wis., CA, $752,890, Contr. 1, c. conc. 4.697 mi. Knellsville-North County Line (North Sect.) and South County Line Cedar Grove Rds., U.S. Hy. 141, Proj. F 01-3 (18) and T 01-3 (10), Ozaukee and Sheboygan Counties. Grand total $2,028,805. Bids Apr. 3. CD 4/8, under LB.

Peterson & Westberg, Cadillac, Mich. CA, $114,000. sewage disposal plant treatment facilities, GLADWIN, MICH. City, R. J. Smith, city clk., Gladwin, Mich. Bids Mar. 30. CD 3/13.

(Continued on page 84)

● Hackensack River Bridge consists of three spans, with the center section being a 375-foot silicon-steel plate-girder span, setting a new U. S. record. Flanking spans are 275 feet long. Designed like all of the New Jersey Turnpike for the safe handling of heavy traffic, this viaduct is 86 feet wide, permitting three lanes of traffic in each direction.

American Bridge Protects New Jersey Turnpike's Hackensack River Bridge With

PITTSBURGH'S NEW XLO STRUCTURAL-STEEL-PRIMER

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1. Unexcelled wetting properties insure uniform protective coating of steel surface irregularities caused by mill scale.
2. Controlled and positive drying permits shipment of fabricated parts to the job site within 24 hours after priming, in all seasons of the year.
3. Standard shop practice for thorough cleaning of metal surfaces before priming may be followed without impractical or costly methods of surface preparation.
4. Provides optimum protection against metal corrosion during shipment and erection; also serves as the foundation coat for the field painting system.
5. In addition to meeting ASTM Specification D-234-48 and Federal Specification TT-O-369 covering Raw Linseed Oil, XLO Structural Steel Primer provides a plus in drying over specification requirements.

● **One of the vital links** of the 118-mile New Jersey Turnpike is the $9,500,000 Hackensack River Bridge opened earlier this year. This important portion of the new toll highway which connects the New York metropolitan area with points south, is 5,623 feet long. Spans for this viaduct were fabricated and erected by the American Bridge Division, United States Steel Company.

● **Pittsburgh is proud** that its new XLO Structural Steel Primer was used to safeguard these record-size girders during transit and erection. This new kind of primer is derived from linseed oil, combined with red lead and iron oxide pigments to provide protection for all kinds of fabricated structural shapes during transit, erection and before application of field coats. It is also furnished with 100% red lead, if desired. A variety of IRONHIDE coatings are also available in a range of colors suitable for field coat application.

● **For further information** write, wire or phone Pittsburgh Plate Glass Company, Industrial Sales Division, 2000 Grant Building, Pittsburgh, Pa., or any of the factories listed below.

PITTSBURGH PLATE GLASS CO., Industrial Paint Div., Pittsburgh, Pa. Factories: Milwaukee, Wis.; Newark, N. J.; Springdale, Pa.; Atlanta, Ga.; Houston, Texas; Los Angeles, Calif.; Portland, Ore. Ditzler Color Div., Detroit, Michigan. The Thresher Paint & Varnish Co., Dayton, Ohio. Forbes Finishes Division, Cleveland, Ohio. M. B. Suydam Div., Pittsburgh, Pa.

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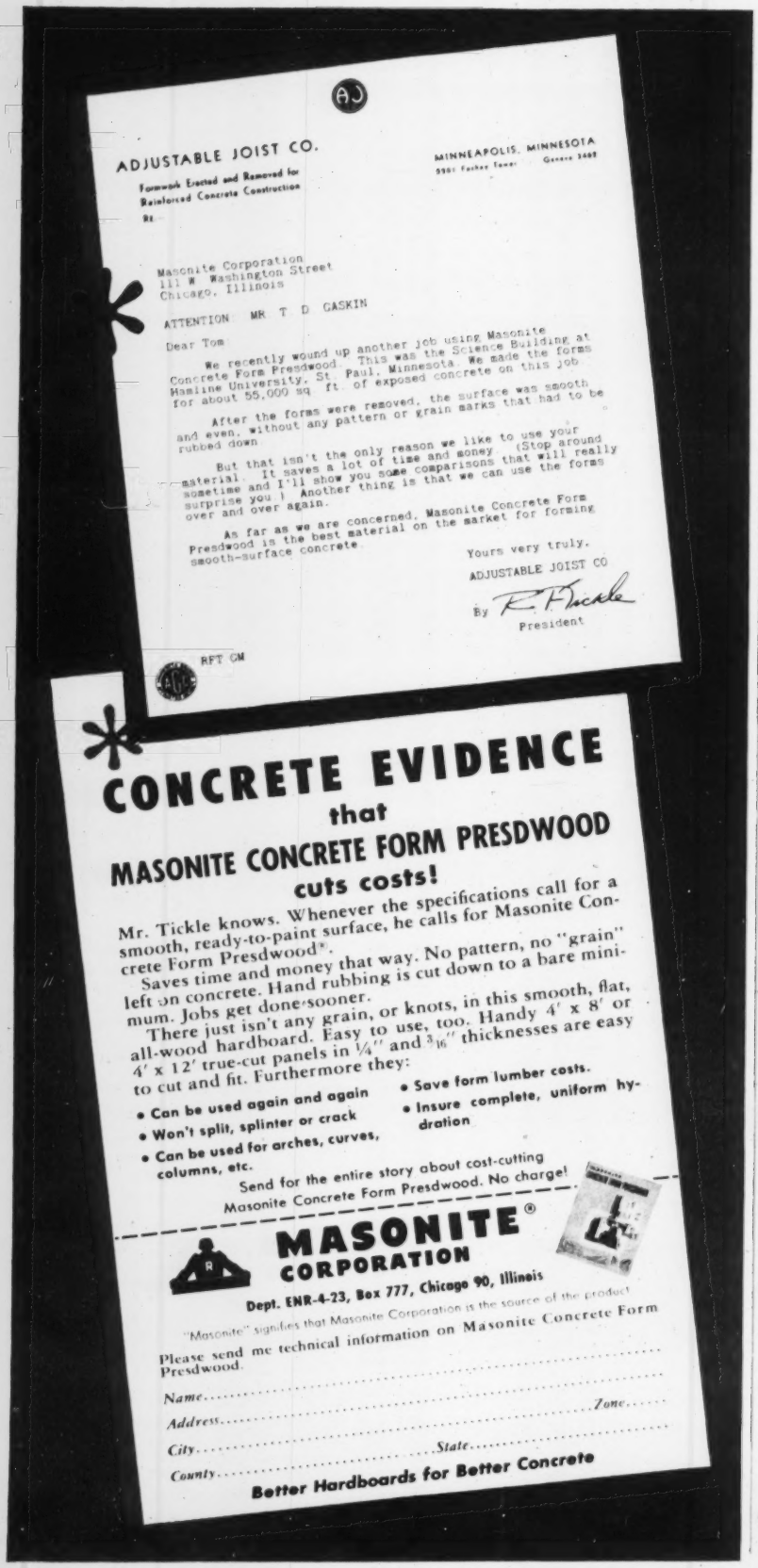

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Masonite Corporation
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Chicago, Illinois

ATTENTION MR T D GASKIN

Dear Tom

We recently wound up another job using Masonite Concrete Form Presdwood. This was the Science Building at Hamline University, St. Paul, Minnesota. We made the forms for about 55,000 sq ft of exposed concrete on this job.

After the forms were removed, the surface was smooth and even, without any pattern or grain marks that had to be rubbed down.

But that isn't the only reason we like to use your material. It saves a lot of time and money. (Stop around sometime and I'll show you some comparisons that will really surprise you.) Another thing is that we can use the forms over and over again.

As far as we are concerned, Masonite Concrete Form Presdwood is the best material on the market for forming smooth-surface concrete.

Yours very truly,
ADJUSTABLE JOIST CO
By R. F. Tickle
President

RFT GM

CONCRETE EVIDENCE that MASONITE CONCRETE FORM PRESDWOOD cuts costs!

Mr. Tickle knows. Whenever the specifications call for a smooth, ready-to-paint surface, he calls for Masonite Concrete Form Presdwood®.

Saves time and money that way. No pattern, no "grain" left on concrete. Hand rubbing is cut down to a bare minimum. Jobs get done sooner.

There just isn't any grain, or knots, in this smooth, flat, all-wood hardboard. Easy to use, too. Handy 4' x 8' or 4' x 12' true-cut panels in ¼" and 3/16" thicknesses are easy to cut and fit. Furthermore they:

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- Won't split, splinter or crack
- Can be used for arches, curves, columns, etc.
- Save form lumber costs.
- Insure complete, uniform hydration

Send for the entire story about cost-cutting Masonite Concrete Form Presdwood. No charge!

MASONITE® CORPORATION

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"Masonite" signifies that Masonite Corporation is the source of the product

Please send me technical information on Masonite Concrete Form Presdwood.

Name.....
Address.....Zone.....
City.....State.....
County.....

Better Hardboards for Better Concrete

(Continued from page 82)

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Howe Constr. Co.**, 215 Monroe Falls St., Cuyahoga Falls, O., CA. Approx. **$1,175,000.** 2 story with 3 story wing, 61x395 ft. brick, stone, steel Boys' Catholic HIGH SCHOOL, on 50-acre plot on Fifth Ave. and S. Arlington St., AKRON, O. Catholic Diocese of Cleveland, 1027 Superior St., Cleveland, O. Awarded Apr. 9. CD 3/18/49.

Leo W. Schmidt Co., 10000 Granger Rd., Garfield Heights, O., CA. **$823,000.** First part of 2 story brick HIGH SCHOOL, Northfield Rd., BEDFORD, O. Bd. Educ., Bedford, O. Bids Mar. 17, awarded Mar. 24. CD 3/24, under LB.

▲ **James McHugh Constr. Co.**, 6449 S. South Park Ave., Chicago, Ill., CA. **$2,217,365,** general constr.;

Electrical Contractors, Inc., 2289 W. Broad St., Columbus O., CA. **$240,171,** electrical work for multi-purpose veterans record and information center, post rooms, assembly hall, public auditorium and exhibition areas, brick, steel, concrete VETERANS MEMORIAL, COLUMBUS, O. Franklin County Veterans Memorial Assn., Court House, Columbus, O. John Q. Adams, Sr., 35 S. Champion St., Eugene T. Benham, 167 E. State St., George D. Crumley, 965 E. Broad St., C. Curtiss Inscho, 60 E. Broad St., Ralph C. Kempton, 50 W. Broad St., Walter E. Pettit and Ray Sims, 2901 N. High St., Columbus, O., archts. Bids Mar. 31. CD 4/3, under LB.

▲ **F. E. B. Constr. Co.**, 8 E. Long St., Columbus, O. CA. **$3,000,000.** 300 single 1 story ranch-type HOMES, east of new Van Buren Village, Inc., on Smithville Rd., DAYTON, O. Van Buren Village Park, Inc., c/o contractor.

Dry Homes Co., 1664 Hagley Rd., Toledo, O. Owner Builds. **$800,000.** 32 two-family ranch type HOMES, Schroeder Ave. between Tremainsville and Alexis Rds., TOLEDO, O. W. E. Wolford, 4143 Monroe St., Toledo, O., archt.

Welso Constr. Co., 2448 W. Fletcher St., Chicago, Ill., CA. **$750,000,** WAREHOUSE and OFFICE, CHICAGO, ILL. Continental Distributing Co., 708 W. Chicago St., Chicago, 10, Ill. Bids Mar. 16, awarded Apr. 3. CD 3/9.

▲ **Zemon Constr. Co.**, 3316 N. Hallem St., Chicago, Ill., CA. Approx. **$3,000,000,** 280 RESIDENCES, in Hillside-Westchester-Broadview, North Riverside, HILLSIDE, ILL. Awarded Apr. 6.

Three A Builders Co., 220 N.W. 8 St., Evansville, Ind. CA. **$308,700.** general contract HIGH SCHOOL addn., ROBINSON, ILL. Bd. Central Community School, Robinson, Ill. Bids Mar. 31. CD 3/24.

▲ **The Charm House Builders**, 2600 Ridge Rd., Evanston, Ill. Owner Builds, **$1,050,000,** 70 HOMES, SKOKIE, ILL. Awarded Apr. 7.

▲ **Colby Constr. Co.**, 8504 Laramie St., Skokie, Ill., Owner Builds, **$2,000,000,** RESIDENCES, water lines, sanitary sewers, paving, SKOKIE, ILL. Frank J. Lapasso, 8 S. Dearborn St., Chicago, 3, Ill., archt. Awarded Apr. 3.

Spence Brothers, 417 McCoskry St., Saginaw, Mich. CA. **$379,800.** 1 story, bsmnt., brick, stone CHURCH, LANSING, MICH. St. Michael's R. C. Parish, c/o Simpson & Hartwick, archts., Bauch Bldg., Lansing, Mich.

Charles C. Engelhardt Constr. Co., Bay City, Mich. CA. Est. **$300,000.** 1 story, bsmnt., brick, stone CHURCH, MIDLAND, MICH. Midland Christian Science Church, Midland, Mich. St. Clair Pardee, 204 E. State St., St. Johns, Mich., archt. CD 1/28/52.

▲ **J. A. Fredman Co.**, Pontiac, Mich. CA. **$1,027,198.** 3 story, 78x205 ft., brick, steel CITY HALL, incl. engineering laboratory, hall, municipal offices, East Pike St., PONTIAC, MICH. City, Ada R. Evans, city clk., Pontiac, Mich. Bids Apr. 1. CD 3/13.

▲ **Meyer Weingarten & Sons, Inc.**, 18956 Wyoming St., Detroit, Mich. CA. **$1,200,000.** 139 single HOMES, John R. and Lincoln Sts. ROYAL OAK, MICH. Second Michigan Co-operative Housing Assoc., Royal Oak, Mich.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Neb., Lincoln**—HEATING PLANT—B.A. 5/6—U. S. Eng., 1709 Jackson St., Omaha, central steam heating plant, Lincoln Air Force Base, Inv. 25-066-53-143. CD 7/17.

† **Wyoming**—TRANSFORMER, etc.—B.A. 5/7—Bureau Reclamation, Dpt. Interior, Reclamation Center, P.O. Box 280, Casper, furnishing, del. power transformer, voltage regulator and power circuit breakers for Lusk Rural Sub-station, Transmission Div., Inv. No. 703S-301; adv. ENR 4/23.

† **Montana**—RADIAL GATE HOISTS—B.A. 5/14—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Tiber and Chester, radial-gate hoists for spillway at Tiber Dam, Marias Division, Lower Marias Unit, Missouri River Basin Proj., Inv. DS 3931, L. N. McClellan, ch. engr. CD 5/25/44.

† **Montana**—MOTOR CONTROL EQUIPMENT ASSEMBLY—B.A. 5/26—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Toston, motor control equipment assembly for Crow Creek pumping plant, Crow Creek Unit, Three Forks Division, Missouri River Basin Proj. Inv. DS 3932, L. N. McClellan, ch. engr. CD 5/25/44.

BIDS ASKED—BUILDINGS

Okla., Ardmore—HOSPITAL—B.A. 4/29—Southern Oklahoma Memorial Hospital, Ardmore, hospital. $700,000. Harold Flood, Ardmore, archt. CD 5/7.

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▲ Colo., Boulder—DORMITORY—B.A. 5/5—University of Colorado, Campus, Boulder, 2 and 3 story, brick dormitory, $1,000,000. Extended date. Trautwein & Howard, 1411 Walnut St., Phila., Pa., engrs. Peterson & Linstedt, 624 W. 14 Ave., Denver, archts. CD 3/24.

SOON LETS CONTRACT—BUILDINGS

Tex., Houston—SALES and SERVICE—Earl Williams, 800 Louisiana St., soon lets contract, 1 story, 60x280 ft. brick, concrete frame auto show, sales, service, shop center. $125,000. Claude E. Hooten, Herman Prof. Bldg., archt. J. L. Davis, 9240 Kelinworth St., engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† Bauer-Smith Dredging Co., Port Lavaca, Tex., LB $180,020, est. $200,000, dredging in Laguna Madre for 119,000 ft., 35 mi. below Corpus Christi, Kleberg and Kenedy Counties, Inv. No. CIVENG-41-243-53-70, TEXAS. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Apr. 6. CD 3/25.

▲ † Benson Clearing Co., Commercial Natl. Bank, Muskogee, Okla., and H. D. Youngman, 703 W. 12 St., Baxter Springs, Kan., LB $1,837,294, clearing timbered land of Texarkana Reservoir area, Inv. 53-174, Bowie and Cass Counties, TEXAS. U. S. Eng., foot of Prytania St., New Orleans, La. Bids Apr. 8. CD 3/26.

Carpenter Bros. 1335 Plowman St., Dallas, Tex., LB $130,500, est. $90,000, sewage treatment plant repairs and addns., DALLAS, TEX. Chance Vought Aircraft, Box 5907, Dallas, Tex. Bids Mar. 31. CD 3/23.

▲† Robert E. McKee, General Contractor, Inc., Box 562, El Paso, Tex., LB $3,653,050. (a) 2 double cantilever medium bomber hangars (b) 600,000 gal. ground level steel water tank (c) water pump station (d) water lines, Inv. No. Eng 29-005-53-110, Kirtland Air Force Base, ALBUQUERQUE, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Apr. 2. CD 3/11.

† Clarke & Winslow, Box 192, Littleton, Colo., CA. $136,429, erosion control program, Phase A, Inv. 291-53-4, LOS ALAMOS, N. M., U. S. Atomic Energy Comn., c/o Procurement Br., Los Alamos, N. M. Bids Mar. 24.

BUILDINGS

LOW BIDS AND CONTRACTS

Lovering Constr. Co., Guardian Bldg., St. Paul, Minn. CA $776,200. general contract POWER PLANT addn., VIRGINIA, MINN. City, Water & Light Comn., F. T. Borg, secy., Virginia, Minn. CD 3/31, under LB.

Morrison Constr. Co., Big Spring, Tex., CA. $309,000. 40 DWELLINGS, ABILENE, TEX. George Steakley, 612 Leggett Dr., Abilene, Tex. CD 3/18.

Virginia Contractors, Inc., Amarillo, Tex. Owner Builds. $310,000. 40 DWELLINGS, AMARILLO, TEX. CD 4/1.

Reef Fields Gas Corp., Big Spring, Tex., Purchase and Hire. $175,000. Natural gas facilities PLANT imprvs., near BIG SPRING, TEX. CD 3/18.

Tellepsen Constr. Co., 1710 Telephone Rd., Houston, Tex. CA. $246,500, dry or cold storage WAREHOUSE, HOUSTON, TEX. Wald Transfer & Storage Co., 812 Live Oak St., Houston, Tex. CD 4/3.

C. O. Beeler, The Home Builder, 4715 Calhoun St., Houston, Tex., Owner Builds. $325,000. 34 DWELLINGS, HOUSTON, TEX. CD 3/20.

Sullivan & Phillips, c/o owner, CA. $339,805. No. 3, 40 DWELLINGS, IRVING, TEX. Mayflower Investment Co., c/o Carr Collins, 912 Commerce St., Dallas, Tex. CD 3/16.

International Creosoting & Constr. Co., Texarkana, Tex. Own Forces. $750,000. PLANT reconstr., TEXARKANA, TEX. CD 4/8.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† Washington—B.A. 5/5—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, single-ended 480-volt load center unit sub-station for Chief Joseph Dam, Bridgeport, Inv. 53-65. CD 12/4/52.

† Washington—B.A. 5/15—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, two 3,000-kva. generators for Chief Joseph Dam, Bridgeport, Inv. 53-64. CD 12/4.

† Idaho—B.A. 6/17—U. S. Eng., 4735 E. Marginal Way, Seattle 4 Wash., installation of equipment and completion of Albeni Falls Powerhouse, Newport, Inv. 53-59. CD 9/12/44.

BIDS ASKED—BUILDINGS

▲ Ore., Milwaukie—RETIREMENT HOME—B.A. 4/28—Willamette View Manor Assn., Milwaukie, 7 story, main structure, four 6-story wings, rein.-con. retirement home. $1,000,000. Walter E. Kelly, 808 S. E. 28th St., Portland, archt.

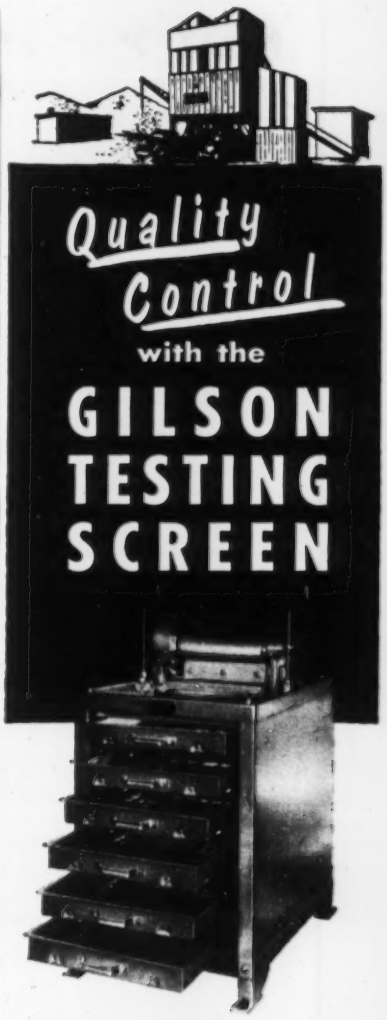
HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

UTAH—State Road Comn., State Capitol, Salt Lake City.

Floyd S. Whiting, P.O. Box 158, Murray, Utah, CA. $710,882, est. $617,863, constr. 5.886 mi. 3 in. plant mixed bit. surfaced roadway U. S. 30-S and U. S. 189 from point 4½ mi. northeasterly from Echo Jct. northeasterly for 5.9 mi., Summit Co. E. G. Johnson, c/o owner, state road engr. Bids Apr. 7.

† San Xavier Rock & Sand Co., Box 1031, Tucson, Ariz., CA. $326,729, est. $250,000. ADC facilities, Davis-Monthan Air Force Base, ENG-04-353-53-117, TUC-



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You can own and maintain a GILSON Screen for only 65-cents per 1,000 tons production in your plant, according to our sales and service records.

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5. Visible separation to refusal
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7. Sturdy construction
8. Size range 4" to 200-mesh

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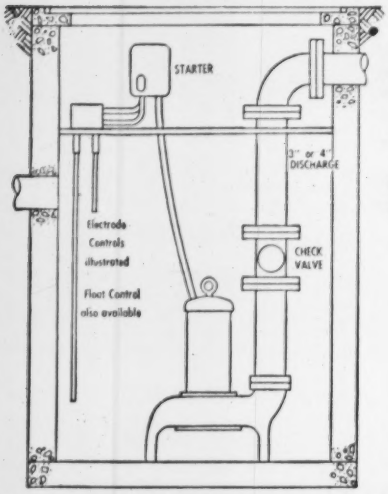

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The Submersible handles anything that will pass through sewage lines.

Designed

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- **for DUST-PROOF operation**

Capacities: 35 to 300 G.P.M. Heads to 45 feet

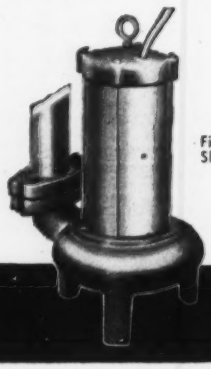

Fig. SE 860

Underground Lift Station with Submersible Pump in wet pit. Requires no pump house to mar the landscape. Duplex units furnished with alternators.

For Heavy Duty Installation—4" discharge—½ to 3 HP. See Bulletin SE 860. Max. dimensions: Dia. 23", Hgt. 28".

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SON, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 3. CD 3/26.

† M. M. Sundt Constr. Co., 440 S. Park Ave., Tucson, Ariz., LB $256,845, est. $300,000, ammo storage, ordnance repair shop, appurtenances, Yuma County Airport ENG-04-353-55-131, YUMA, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 3. CD 3/11.

Willamette Iron & Steel Co., 2860 N.W. Front Ave., Portland, Ore., LB, $339,258, spillway gates for Box Canyon Dam, Ione, WASHINGTON, Pend Oreille County Public Utility District, Newport, Wash.

BUILDINGS

LOW BIDS AND CONTRACTS

Westover & Hope, Quincy, Wash., CA, $500,000 180x80 ft., rein.-con., masonry tractor mfg. PLANT, EPHRATA, WASH. General Tractor Co., 3709 University Way, Seattle 5, Wash. CD 1/14, under LB.

John H. Sellen Constr. Co., 228 # Ave. N., Seattle, Wash., LB, $842,549, 6 story 77,800 sq. ft. DORMITORY SEATTLE, WASH. Seattle University, Broadway Ave. and Madison St., Seattle, Wash. Bids Apr. 8. CD 3/20.

Gallinger Constr. Co., Spreckles Bldg., San Diego, Calif., Owner Builds. $550,000. 47 double stucco DWELLINGS, in Palm Vista Tract, CARLSBAD, CALIF.

▲ Centex Constr. Co., 235 Broadway, San Diego, Calif., CA, $1,325,000, 87 double DWELLINGS, Madison, Jefferson and Colorado Ave., CHULA VISTA, CALIF. Ocean Heights Development Co., 235 Broadway, San Diego, Calif.

Harold Roach Constr. Co., 607 N. Vermont Ave., Los Angeles, Calif., CA, $875,000, two 189,000 sq. ft. and 47,000 sq. ft. WAREHOUSES, Union Pacific Ave., EAST LOS ANGELES, CALIF. Harold & Betty Roach, 607 N. Vermont Ave., Los Angeles, Calif.

J. A. McNeil Co., Inc., 3115 W. Mission Rd., Alhambra, Calif., CA, $360,000, 3 story, rein.-con. DORMITORY, LOS ANGELES, CALIF. Occidental College, 1600 Campus Rd., Los Angeles, Calif. Wm. M. Taggart, 3123 W. 8 St., Los Angeles, Calif., engr. Hector Tate, 3757 Wilshire Blvd., Los Angeles, archt.

W. J. Moran Co., 1011 S. Fremont Ave., Alhambra, Calif., CA, $300,000, 50,000 sq. ft. FACTORY, 2724 S. Peck Rd., MONROVIA, CALIF. Aerovox Corp., 1011 S. Fremont Ave., Alhambra, Calif.

David Young Builder, Inc., 3504 Dixie Dr., San Diego, Calif., CA $775,000, 51 stucco double DWELLINGS Severin and Horton Dr., SAN DIEGO, CALIF. Severin Development Co. Inc., 3504 El Cajon Blvd., San Diego, Calif.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

N. B., Fredericton—GARAGE—B.A. 4/30—Defence Constr. Ltd., 1032 Gottingen St., Halifax, N. S., 50-vehicle R.C.A. S. C. garage, Job. 2352. $300,000. Plans deposit $100. C. J. Connally, c/o owner, engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

New West Constr. Ltd., Edmonton, Alta. CA $295,777. grading for R.C.A.F. Station, EDMONTON, ALTA. Dpt. National Defence, Ottawa, Ont. Defence Constr. Ltd., 460 Kensington Bldg., Winnipeg, Man., engr. CD 3/3/48.

▲ NOVA SCOTIA—Dpt. Transport, Hunter Bldg., Ottawa, Ont.

T. C. Gorman Nova Scotia Ltd., 123 Roy Bldg., Halifax, N. S., CA, $4,817,777, navigation lock for Strait of Canso causeway between Balach Point and Cape Porcupine near St. Peters. Awarded Mar. 13. (Correction-contractor). CD 3/17, under CA.

BUILDINGS

LOW BIDS AND CONTRACTS

Enterprising Developments, 32 Bainbridge Ave., Wilson Heights, Toronto, Ont. Owner Builds, $300,000, 3 story, bsmnt. APARTMENT BLOCK, 45 one and two bedroom suites, Berry Rd., TORONTO, ONT. W. Shulman, 463 Spadina Ave., Toronto, Ont., archt.

Cadillac Contracting & Development Co. Ltd., 147 Spadina Ave., Toronto, Ont., Owner Builds. $640,000 two 3 story, bsmnt., 87-unit brick APARTMENT BLOCKS, concrete block fdn. Kinsdale Blvd., TORONTO, ONT. W. Shulman, 463 Spadina Ave., Toronto, Ont., archt.

Anderson-Smythe Ltd., 154 Merton St., Toronto, Ont., CA, $650,000, 1 story, 53,400 sq. ft., rein.-con. brick, WAREHOUSE, loading dock, sewer and water services, TORONTO, ONT. R. Laidlaw Lumber Co. Ltd., 2289 Dundas St. W., Toronto, Ont. Pentland, McFarland & Baker, 1123 Bay St., Toronto, Ont., archts. Awarded Apr. 7.

R. C. Hamelin Ltd., 1540 Beaugarde St., Ville Jacque Cartier, Que. CA $250,000. BOILER HOUSE, MONTREAL, QUE. Reverend Brothers of Charity, 8050 Notre Dame St., E., Montreal, Que. Gascon & Parent, 934 E. Ste. Catherine St., Montreal, Que., archt.

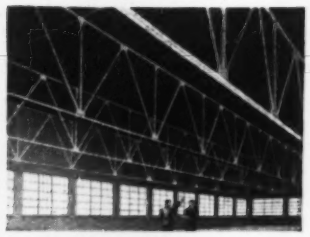
ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

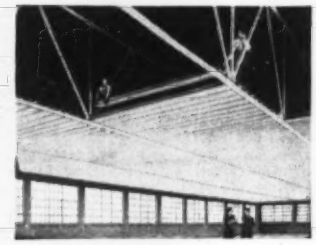
† ALASKA—B.A. 5/5—Alaska Road Comn., Dpt. Interior, Juneau.

50 ft. I-beam span on steel H pile abutments over Moose Creek, 180 ft. 3-span continuous I-beam structure over Jarvis Creek on Richardson Hy. Plans deposit $10.

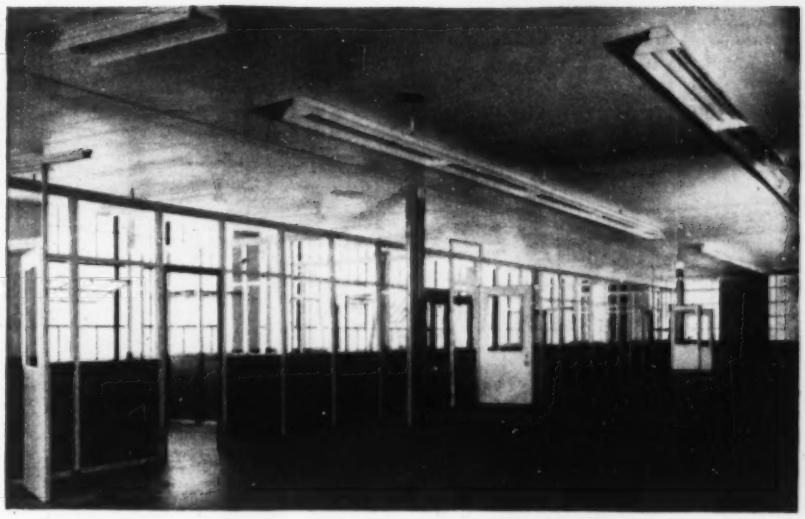
(Continued on page 88)



To this old factory . . .



they simply did this . . .



to get this . . .

Fenestra acoustical-structural panel ceiling changes old factory into modern office . . . OVERNIGHT!

Out of a sow's ear . . . !

A big Michigan concern needed office space in a hurry and the only available building was an old one-story factory.

Steel beams (the bottom chords of the roof trusses) ran clear across the building . . . every 20 feet.

So they simply laid 20-foot Fenestra* Acoustical-Structural Steel Panels side by side, from one beam to the next. Quickly, inexpensively, the long, strong panels interlocked into a flat, handsome acoustical ceiling . . . and acted as a load-carrying storage floor for ducts, air conditioning, electrical services and such.

While they were doing all this, the company employees went right on working below. Using the first few panels laid as a storage and working platform the installation crew stayed up above. And, of course, there was neither dirt nor dust to shower down below.

They can clean their Fenestra acoustical ceiling with soap and water, or paint it without hurting its acoustical efficiency. And, of course this acoustical ceiling is noncombustible.

Cost?

Less than $1.25 per square foot . . . installed!

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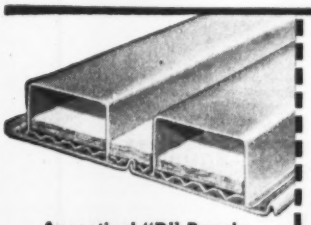
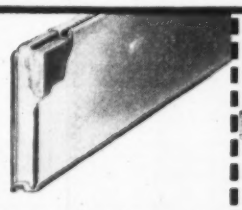
Fenestra METAL BUILDING PANELS

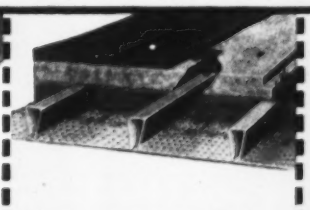
. . . engineered to cut the waste out of building



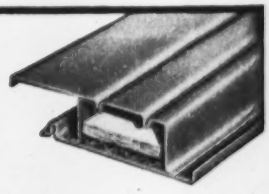
Acoustical "D" Panels for roofs, floors, ceilings. Width 16". Depth 1½" to 7½".



"C" Insulated Wall Panels. Width 16". Depth is 3". Steel or aluminum.



Acoustical Holorib for acoustical-structural roof. Width 18". Depth 1½".



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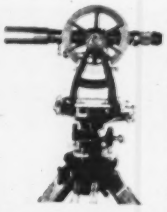

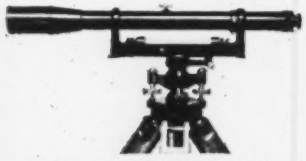

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(Continued from page 86)

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Boen & Koon and Egge & Cummins,** 3647 Stone Way, Seattle 3, Wash., CA. $1,042,790, est. $1,053,455, seven 2 story bsmnt. family quarters, Elelson Air Force Base, ENG-95-507-53-38, ALASKA. U. S. Eng., Evergreen Hall, 3013 Arcade Bldg., Seattle 1, Wash. Bids Feb. 16. CD 2/20, under LB.

† **United Contractors,** Fairbanks, Alaska, CA $500,000. organizational maintenance shop bldg., Elelson Air Force Base, Inv. 53-50, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Feb. 91. CD 2/16, under LB.

▲† **Lytle & Green and S. Birch & Sons,** Securities Bldg., Seattle 1, Wash., CA. $1,159,682, est. $1,174,596 laundry and dry-cleaning plants, Inv. 53-59, Ladd Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Mar. 10. CD 3/17, under LB.

† **U. S. Eng.,** Anchorage, Alaska, cancelled bids to have been opened May 19, six 42x28 ft. rein.-con. underground ammo storage magazines, 14 ft. high, Ladd Air Force Base, Inv. 53-82, ALASKA. Est. $576,000. Will re-advertise. CD 4/7.

BUILDINGS

LOW BIDS AND CONTRACTS

Denali Constr. Co., Anchorage, Alaska, CA $450,000. BANK, ANCHORAGE, ALASKA. First National Bank, Anchorage, Alaska. CD 10/8, under LB.

C. R. Foss, Inc., Anchorage, Alaska, CA. $564,885 est. $600,000. steel, concrete HOSPITAL, PALMER, ALASKA, Valley Hospital Assn., Palmer, Alaska. Bids Feb. 20. CD 3/2 under LB.

Proposed Projects

WATER SUPPLY

Ky., Muldraugh—City, WW and sanitary sewerage sys., $370,000, Miles O. Sherrill, 1412 Bardstown Rd., Louisville, consult. engr.

Tex.-Ark., Texarkana—Texarkana Water & Sewer System, Texarkana, Tex.-Ark., water filter plant. $800,000. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs.

SEWERS, WASTE DISPOSAL

Calif., Montalvo—Montalvo Sanitary District, Montalvo, voted $347,081 bonds, repair, maintain sewage collection and outfall works. Hostrup, Lyons & Assoc., 9526 W. Pico Blvd., Los Angeles, consult. engrs.

Calif., Petaluma—City, City Hall, voted $575,000 bonds, enlarging sewerage sys., Harry N. Jenks, 63 Crescent Dr., Palo Alto, consult. engr. CD 3/3.

▲ **Ill., Springfield**—City, City Hall, rehabilitation of city sewerage system. $8,625,000. Crawford, Murphy & Tilly, 400½ E. Adams St., and Jenkins, Merchant & Nankivil, 805 E. Miller St., consult. engrs. CD 2/11/49.

Ind., Andrews—Town Rd., Ed Reemer, pres., sewage treatment plant, sewers, water sys. $303,000. Garns & Moore, 827 Ind. Pythian Bldg., Indianapolis, Zone 4, consult. engrs.

▲ **Mich., Pleasant Ridge**—Southeastern Oakland Co. Garbage & Rubbish Auth.; 23646 Woodward Ave., 1 story, concrete incinerator facilities, John R. and Twelve Mile Rds. $1,750,000, Greeley & Hansen, 220 S. State St., Chicago, Ill., consult. engrs. George G. Schmid, Pleasant Ridge, dir.-engr. CD 4/2.

Mo., Macon—City, sewerage sys. imprvs. $410,000, A. C. Kirkwood & Assoc., 3102 Troost St., Kansas City, Mo., consult. engrs.

N. Y., Tonawanda—Sewer Dist. 3, Town of Tonawanda, sewage treatment plant. $500,000. CD 3/25/46.

▲ **Tex., Houston**—City, City Hall, 900 Brazos St., 4 mi. sanitary sewer trunk line to serve 4,500 acre area, northwest sect. of city, along east side of Little White Oak Bayou, $1,000,000. Freese & Nichols & Turner, C & I Bldg., consult. engrs. CD 5/24/49.

Va., Virginia Beach—City, City Hall, voted $300,000 bonds Mar. 31, sewer imprvs. Philip D. Freeman, P. O. Box 6095, Milan Station, Norfolk, consult. engr. CD 3/24.

BRIDGES

▲ **IDAHO**—State Hy. Dpt., Boise.
Bonner Co.—replacing 2 mi. wooden bridge over Pend d'Oreille Lake at Sandpoint, $1,000,000.
Twin Falls Co.—erecting underpass and surf., 7.6 mi. U.S. 93, south of Rogers, $600,000. Earle W. Miller, state hy. engr.

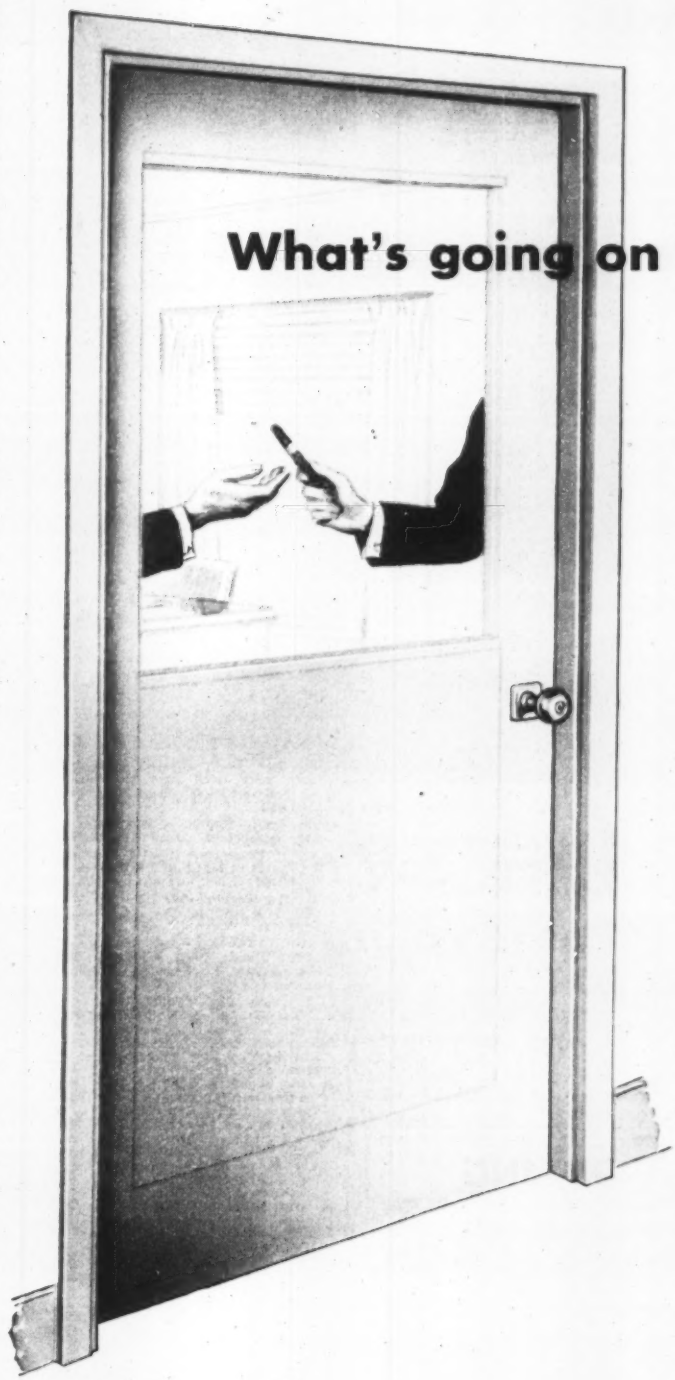
O., Cleveland—City, City Hall, Zone 14, joint project with Cleveland Transmit System, 1404 E. 9 St., providing new highway bridge over railroad and widen Detroit Ave. between West Boulevard and Berea Rd. $500,000. John C. Wenrick, c/o owner, engr. CD 11/7.

STREETS AND ROADS

▲ **Colo., Denver**—City and Denver Co., City and County Bldg., street imprvs. E. 17 and York and York and Josephine Sts., incl. traffic rotary intersection at E. 17 and York Sts., one way street system in York and Josephine Sts., $2,000,000. Terry Owens, City and County Bldg., city engr. CD 2/27/50.

(Continued on page 90)

Fenestra
BUILDING INFORMATION



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You save on installation cost because these handsome doors come complete with strong, prefitted, prime-painted, steel frames and shining hardware. Again, time and labor are saved. There's no cutting or fitting—the door is in and in use a lot more quickly.

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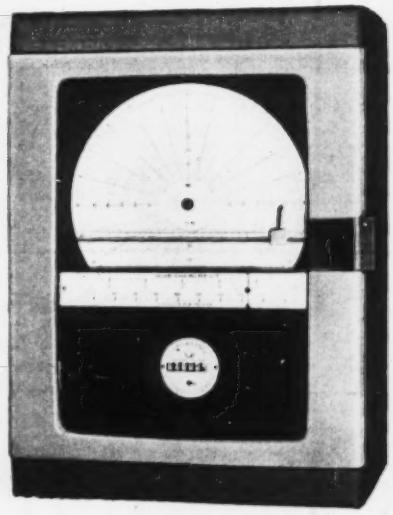
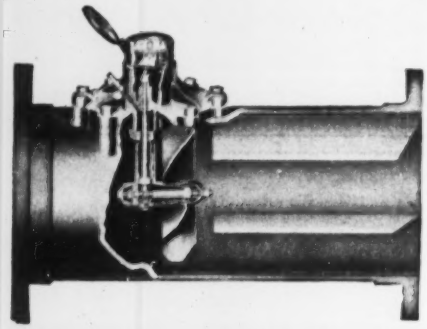
Bulletin 312 shows various types available; also auto-metered controls for chemical feed equipment.





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(Continued from page 88)

▲ IDAHO—State Hy. Dpt., Boise,
Bannock Co.—wid'n., surf. 8 mi. U.S. 30 North between Lava Hat Springs and Pebble, $200,000.
grading, surf., railroad underpass 1.3 mi. U.S. 30 North, $600,000.
surf. 11 mi. U.S. 91 between Arimo and Downey, $300,000;
Canyon Co.—grading, surf. 1.4 mi. U.S. 20 east of Caldwell, $450,000;
grading, surf. 2.2 mi. Nampa city streets, $209,000.
Elmore Co.—grading, surf. 2.2 mi. U.S. 30 east of Glenns Ferry, $400,000.
Idaho Co.—reconstr., wid'n., surf. 6 mi. U.S. 95 between Riggins and Whitebird Creek, $500,000.
Jefferson Co.—grading, surf. 4.5 mi. U.S. 91 between Bassett and Roberts, $360,000.
Jerome Co.—grading, surf. 6.5 mi. Jerome-Wendell Rd., $800,000.
Latah Co.—surf. 10.9 mi. U.S. 95 near Genessee, $175,000.
Nez Perce Co.—wid'n. 4 mi. U.S. Hy. 95, $650,000.
Oneida Co.—grading, surf. 10 mi. U.S. 191, $675,000.
Power Co.—grading, surf. 4.8 mi. U.S. 30, $550,000.
Shoshone Co.—grading, surf. 3.17 mi. U.S. 10 between Pine Creek and Smeltervile, $250,000.
Twin Falls Co.—grading, surf. 13 mi. U.S. 30 from Twin Falls west, $550,000. Earle V. Miller, state hy. engr.
KENTUCKY—State Hy. Comn., Frankfort and City of Louisville, Bd. P. Wks., City Hall, Louisville,
Jefferson Co.—imprv. 21 and 22 Sts. preparatory to linking them as 1-way street sys., Louisville, $375,000. W. W. Sanders, city engr. CD 6/1/51, under Ky., Louisville.
O., Cleveland—City, City Hall, Zone 14, exten. W. 3rd Street roadway and ramp from Superior to Prospect Aves. $500,000. John C. Wenrick, c/o owner, city comr. of engrg. CD 12/13/43.
▲ W. Va., Charleston—City, City Hall, exten. Quarrier St. 3 blocks to connect with Brown St., grading, concrete curb, gutter sidewalks and pavement, $500,000; exten. 7 Ave. 2 blocks to Virginia St. widening 9 blocks same street concrete curb, gutter, sidewalk and pavement, $250,000; exten. Dickinson St. to South Side Bridge 1 block grading, concrete curb, gutter, sidewalk and pavement, $300,000. H. L. Campbell, city engr. CD 9/10/45.

EARTHWORK, WATERWAYS

Va., Virginia Beach—City, City Hall, voted $900,000 bonds Mar. 31, beach erosion imprvs. Myron A. Sturgeon Engineers, 2124 Kimball Terrace, Norfolk, consult. engrs. CD 3/24.

PUBLIC BUILDINGS

Calif., Bellevue—SCHOOL—Bellevue Union School District, Santa Rosa, plans by Clarence A. Caulkins, Jr., Rosenberg Bldg., Santa Rosa, elementary school, $500,000.
Calif., Clovis—SCHOOL—Clovis Union High School, Box 338, voted bonds, school addn. $673,000. CD 3/12.
▲ Calif., Pittsburg—SCHOOL—Pittsburg Unified School District, Pittsburg, $1,250,000 bond election May 15, school addns., alterations. CD 8/12.
Calif., San Anselmo—SCHOOL—City, City Hall, $665,000 bond election May 15, school expansion. CD 10/8/51.
▲ Calif., Santa Ana—SCHOOLS, etc.—Santa Ana City School District, 1415 French St., $3,985,000 bond election June 2, elementary, high school and junior college.
Calif., Yuba City—SCHOOL—Yuba City Union High School District, Yuba City, $600,000 bond election May 15, high school room addn. CD 4/6/51.
Calif., Yuba City—SCHOOL—Yuba City Unified School District, Yuba City, $600,000 bond election May 15, school addn.
▲ Conn., Fairfield—SCHOOL—Town, High School Bldg. Comn., C. J. McClinch, Sr., chm. Town Hall, plans by Lyons & Mather, 211 State St. Bridgeport, high school, eastern end of town $1,000,000. CD 3/4.
Conn., Simsbury—SCHOOL—Town, Simsbury School Bldg. Comn., Town Hall, plans by Ebbets-Frid & Prentiss, 862 Asylum Ave., Hartford, elementary school, Nimrod Rd. $600,000. G. A. Yarwood, Weatogue St., Simsbury, landscape archt.
▲ Conn., Stonington—SCHOOL—Town, Bd. Educ., Stonington, Junior-Senior High School, $1,600,000. Charles A. Maguire & Assocs., 1015 Turks Head Bldg., Providence, R. I., probable consult. engrs. CD 4/25/50.
Ind., Crisman—SCHOOL—Trustees, Portage Twp., plans by Raymond Kastendieck, 673 Broadway, Gary, Township High School. $600,000.
Kan., Kingman—SCHOOL—Bd. Educ., Kingman $576,000 bond election Apr. 7, high school, R. L. Hollis, 1206 E. Waterman St., Wichita, archt.
Minn., North Branch—SCHOOL—Bd. Educ., G. Larson, clk., defeated $595,000 bonds Mar. 24, school, addns. to two existing schools. H. H. Swanson, 600 Sexton Bldg., Minneapolis, archt. CD 3/18.
Mont., Helena—LABORATORY—State Bd. Examiners, Helena, plans by Vincent Walsh, Helena, state laboratory, $900,000. CD 3/7/51.
Neb., Hastings—HOSPITAL—State Bd. Control, Lincoln, medical-surgical bldg. at Hastings State Hospital, $885,000. CD 2/2.
Neb., Kearney—SCHOOL, etc.—State Bd. Control, Lincoln, school bldg. and dormitory at State Boys Training School, $505,000.

(Continued on page 92)

Fenestra
BUILDING INFORMATION

Light inside even on a dark day. Fenestra Steel Windows in Millford Mill Junior-Senior High School, Pikesville, Maryland. *Contractor:* John K. Ruff, Inc., Baltimore. *Architect:* E. H. Glidden, Jr., Baltimore.

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By not shutting a lot of it out!

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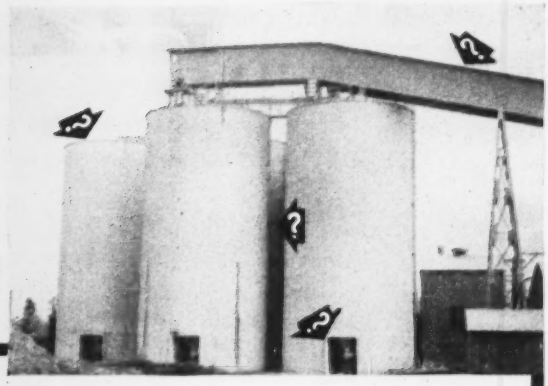

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120 Liberty St. *REctor 2-1779* NYC 6

(Continued from page 90)

Neb., Lincoln—DORMITORY—State Bd. Control, Lincoln, dormitory at State Penitentiary, $492,500. CD 8/25/50.

▲ N. J., Laurelton—HIGH SCHOOL—Brick Twp. Bd. Educ., Laurelton, high school, $1,000,000.

▲ O., Delaware—SCHOOL—Delaware School Dist., Delaware, $1,336,000 bond election June 9, 12-room elementary school, $450,000; 14-room Junior High School, $575,000; modernization of five schools and equip. C D 3/16.

O., Warren—SCHOOL—Howland Twp. School Dist. Bd. Educ., Warren, $575,000 bond election May 5, school and present school addn.

▲ Pa., Bristol—SCHOOL—Bristol Twp. School Dist., R. D. 3, Bristol, elementary school, Levittown, $1,000,000.

▲ Pa., Phoenixville—HIGH SCHOOL—Phoenixville Boro School Bd., Phoenixville, plans by The Ballinger Co., 121 N. Broad St., Phila., high school, $1,000,000. Douglas Marsh Blum, 23 S. Main St., assoc, archt. CD 12/28/45.

S. D., Yankton—HOSPITAL—State of South Dakota, Pierre, state hospital addn. $500,000. D. W. Loucks, c/o owner, state engr.

▲ Tex., San Antonio—COURTS and JAIL—Bexar Co., Comrs. Court, Court House, defeated bonds Mar. 31, courts and jail bldg. unit, $3,925,000. CD 2/25.

▲ W. Va., Charleston—EXPOSITION HALL, etc.—City, City Hall, exposition hall, civic center, Reynolds St. between Lee St. and Kanawha Blvd. $1,000,000. H. L. Campbell, city engr.

▲ Ont., Hamilton—HOSPITAL—Hamilton Hospital Bd., plans by W. B. Souter & Assocs., 36 James St. S., 200-bed children's public hospital, Concession St. next to Mountain Hospital, $2,500,000.

COMMERCIAL BUILDINGS

▲ Calif., Daly City—HOME UNITS—Steeling Bldg. Co., 6798 Mission St., first 500 home units of planned 3000 unit project, incl. sewer and water lines, streets and shopping center, in Pedro Valley, San Mateo Co. $35,000,000.

▲ Calif., Palo Alto—RESIDENCE HALL, etc.—Stanford University, Palo Alto, residence hall, $3,500,000; women's dormitory, $3,000,000, other residence bldgs., Total est. $9,000,000.

▲ Calif., San Leandro-Hayward—SHOPPING CENTER—Macy's San Francisco, Stockton and O'Farrell Sts., San Francisco, Capital Co., 1 Powell St., San Francisco, and Beckett & Federighi, 1327 Lillian Ave., San Leandro, Bay-Fair Shopping Center, on Oakland Speedway Stadium site, $25,000,000, incl. $6,000,000 Macy store Victor Gruen, archt., 967 Sutter St., San Francisco, made preliminary architectoral studies.

▲ Conn., Hartford—APARTMENT—Owner, c/o Kane & Fairchild, archts., 734 Asylum St., 12 story apartment Asylum Ave. and Garden St. $2,000,000.

▲ Del., Wilmington—CHURCH, etc.—St. Mary Magdalene Roman Catholic Church, Rev. Henry A. Miller, pastor, Sharpley Rd., plans by Gleeson & Mulrooney, Fox Bldg., Phila., Pa., church school, convent and rectory, $1,000,000.

Mass., Chelsea—HOSPITAL—State, P. Bldgs. Comn., 20 Somerset St., Boston, plans by Perry Shaw & Hepburn, Kehoe & Dean, 31 St. James Ave., Boston, altering Adams Memorial Hospital-Soldiers' Home, $650,000. CD 3/10.

Mich., Bay City—SCHOOL—St. James R. C. Parish, Bay City, plans by Joseph C. Goodeyne, 415 Bay City Bank Bldg., 3 story, brick, steel high school, $750,000. CD 4/2.

▲ Mich., Oak Park—HOUSING DEVELOPMENT—Schostak & Co., 3415 Cadillac Tower, Detroit, plans by Theodore Rogvoy, 929 Fox Bldg., Detroit, 475 brick garden apartments on 45 acres, Nine Mile Rd. and Coolidge area, $4,000,000.

N. Y., Brooklyn—APARTMENT—Barlut Building Corp., 782 E. 93 St., Zone 12, plans by Seelig & Finkelstein, 153 Pierrepont St., Zone 2, 6 story apartment, 1244 Ocean Ave. $770,000.

N. Y., New York—SCHOOL—St. Theresa Church, 1912 Mayflower Ave., Zone 61, plans by Anthony J. DePace, 151 W. 46 St., Zone 19, 2 story school, Morris Park and Pilgrim Aves. $600,000.

N. Y., Schenectady—SHOPPING CENTER—Central Markets, Inc., 140 Erie Blvd., plans by Sumner Schein, 333 Washington St., Boston, Mass., shopping center, $600,000.

N. D., Williston—CHURCH—First Lutheran Church, Rev. C. B. Nervig, Williston, plans by G. C. Peterson, 440 Endicott Bldg., St. Paul, Minn., 66x150 ft. church, bell tower a separate structure, incl separate unit for offices, etc. $600,000.

▲ O., Rocky River—HOUSES—Fairhill Constr. Co., 20340 Center Ridge Rd., 31 ranch type houses on old Waldrue property north of Story Rd. $1,000,000.

▲ O., Toledo—SHOPPING CENTER—Hugh J. Bartley & E. S. Snyder, 222 Erie St., plans by Bellman, Gillett & Richards, 518 Jefferson St., 1 story, with 650 ft. frontage shopping center, 2 bldgs., approx. 20 or 22 stores, parking for 300 cars, on Central Ave. and Secor Rd. $1,000,000.

Pa., Phila.—SHOPPING CENTER—Denmax Homes, Inc., 20 S. 15 St., plans by Christian H. Fried, 3703 N. Broad St., shopping center, Tyson Ave., etc. $500,000.

Pa., Pottstown—HIGH SCHOOL—St. Aloysius Roman Catholic Church, 214 N. Hanover St., high school, $600,000.

▲ Pa., Villanova—DORMITORY—Villanova College, Villanova plans by Henry D. Dagit & Sons, 1329 Race St., Phila., dormitory, $1,218,000.

(Continued on page 95)

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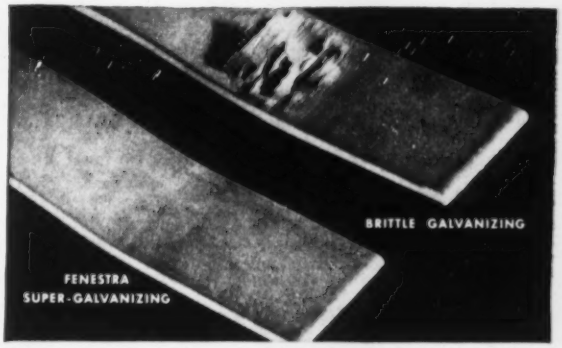

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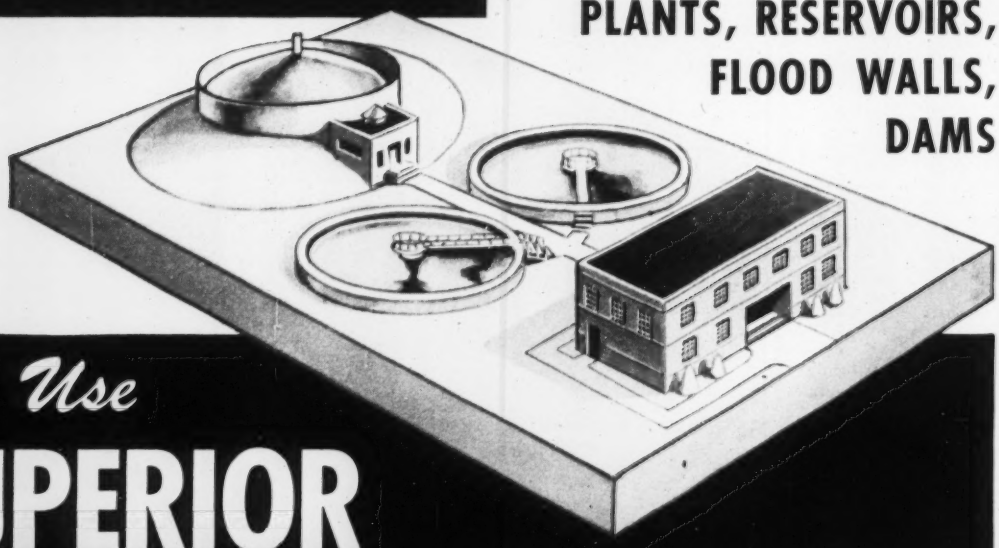

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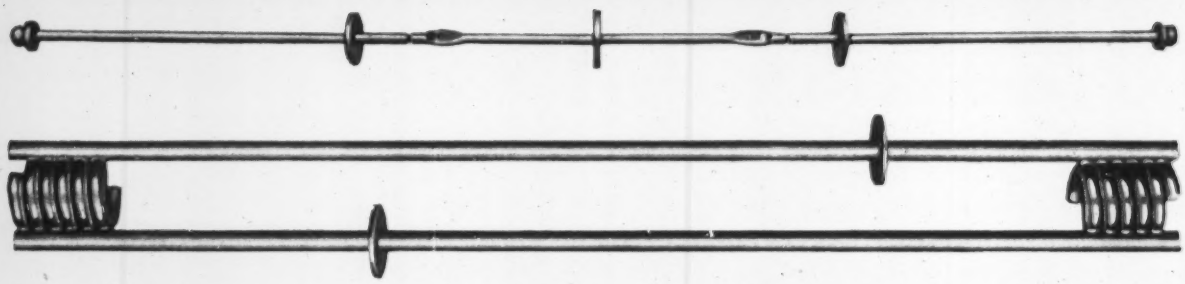

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(Continued from page 92)

R. I., Newport—HOUSING—First Naval Dist., 495 Summer St., Boston, Mass., plans by Cull & Robinson, 385 Benefit St., Providence, construct, manage, finance 80 unit housing. $800,000.

▲ Tex., Bellaire—DWELLINGS Rotterman & Hoffman, 5213 Lindon St., Houston, plans by Henry S. Hoffman, 3602 Old Spanish Trail, Houston, Tract No. 1, (a) 35 dwellings, $350,000 (b) 30 dwellings, $300,000 (c) 50 dwellings, $500,000 (d) 42 dwellings, $390,000 (e) 41 dwellings, $425,000. CD 3/27.

▲ Tex., Bellaire—DWELLINGS—Rotterman & Hoffman, 5213 Lindon St., Houston, plans by Henry S. Hoffman, 3602 Old Spanish Trail, Houston, Tract No. 2, (2) 25 dwellings, $300,000 (3) 44 dwellings, $425,000 (4) 34 dwellings, $355,000 (5) 36 dwellings, $370,000 (6) 40 dwellings, $390,000. CD 3/27.

▲ Tex., Houston—DWELLINGS—Wm. S. Borden, D. S. Grogan & M. Jacobson, 4328 Navigation Blvd., 45 dwellings, $365,000; 35 dwellings, $345,000; 28 dwellings, $310,000; 25 dwellings, $305,000; 30 dwellings, $300,000; 38 dwellings, $325,000 in tract off 7500 Blk. of Lyons Ave.

▲ Tex., Houston—DWELLINGS—Inwood Terrace Addition, South Park Blvd., Job 1, 30 frame brick trim dwellings, $340,000; 40 cedar shake trim dwellings, $320,000; Job 3, frame type dwellings, $315,000; Job 4, 44 brick trim, dwellings, $375,000; Job 5, 48 brick and Austin Limestone planters, cedar shake trim dwellings, $395,000; in tract adjacent to Edgewood Addition.

▲ Tex., Houston—DWELLINGS—W. J. McArdle, 3784 Robinhood St., No. 1, 8 masonry dwellings, $320,000; No. 2, misc. type dwellings, $520,000; No. 3, 12 one-story masonry dwellings, $420,000; No. 4, 15 masonry, frame dwellings, $450,000, in O'Meara tract.

Tex., Midland—CLUBHOUSE—Midland Country Club, 1000 Cuthbert St., clubhouse, $425,000.

▲ Va., Alexandria—HOUSING—M. T. Broyhill & Sons, 4624 Lee Hy., Arlington, 248 unit, Wakefield Housing Development. $3,000,000.

▲ Va., Alexandria—HOUSING—West Alexandria Corp. (Banks and Lee), Tower Bldg., Wash., D. C., 162 units Duke Gardens Housing Development. $1,600,000. Banks and Lee, c/o owner, engr.

Va., Alexandria—RESIDENCES—Yates Gardens, c/o Walter Huenemoerder, archt., 2647 Connecticut Ave. N.W., Wash., D. C., 80 two story, bsmnt., brick, concrete masonry residences. $950,000.

Va., Portsmouth—RESIDENCES—Harry & Joseph Cashvan, 112 Tyler Crescent, 100-150 residences, $750,000.

▲ Ont., Fort Erie—HOUSES—F. A. Branscombe, 606 Queen St., Niagara Falls, 196 houses north of Bertie St. $2,000,000.

▲ Ont., Ottawa—STORE—Simpson—Sears Ltd., Yonge St., Toronto, store, Bank St. $1,000,000.

INDUSTRIAL BUILDINGS

▲ Colo., Canon City—FERTILIZER PLANT—National Farmers Union, 1555 Sherman St., Denver, fertilizer plant. $4,000,000.

Ind., Indianapolis—OFF STREET PARKING—Denison Parking, Inc., Pennsylvania and Ohio Sts., Zone 4, plans by D. A. Bohlen & Son, 930 State Life Bldg., Zone 4, 6 story, 126x195 ft., rein.-con., off-street parking bldg., Penna. and Ohio Sts. $500,000.

Ind., Indianapolis—MARKET—Stop and Shop Market Chain, 120 S. Alabama St., market bldg. with parking plot, 12 and Main Sts. $500,000.

Ind., Seymour—HOSPITAL—Jackson Co., Court House, Schneck Memorial Hospital addn. $850,000.

▲ Ky., Louisville—PLANT—Ford Motor Co., 3000 Schaefer St., Dearborn, Mich., plans by Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., plant on Strawberry Lane, incl. grading, drainage, R.R. $4,000,000. Codell Co., Winchester, Ky., lessee. CD 6/4/51.

▲ Maryland—REFINERY—American Oil Co., American Bldg., Baltimore, Zone 2, complete oil refinery on Eastern Shore of Maryland, Negotiating for site, on 1,000 acre area, Geo. E. Blatchley, c/o owner, ch. engr.

Mass., New Bedford—MANUFACTURING—New Bedford Defense Products Corp., 117 King St., electrical mfg. bldg., King and Park Sts. $850,000.

▲ Mo., Hillsboro — PLANT — Mathieson-Mississippi Co., Dr. Carl Purtton, pres., c/o Mathieson Chemical Corp., Mathieson Bldg., Baltimore, Md., plant for mfg. chemical fertilizers to be derived from natural gas, incl. phosphatic fertilizers, development of petrochemical operation, Jefferson Co., adjacent to Mississippi River, near here. $21,000,000. CD 3/9/53, under Mo., St. Louis.

▲ O. Addyston—PLANT—Monsanto Chemical Co., 1700 S. 2 St., St. Louis, Mo., polyethylene plastics mfg. plant. $30,000,000.

▲ Pa., Hollidaysburg — TERMINAL — The Pennsylvania R.R., J. L. Gressitt, ch. engr., Broad St. Station Bldg., 1617 Pennsylvania Bldg., Phila., Zone 4 railroad terminal and freight car repair shops. $12,000,000. CD 10/24.

▲ Pa., Norristown—TERMINAL—Phila. & Western Railroad Co., 69th St. Terminal, Upper Darby, plans by Crawford & Friend, Norristown, trolley and bus terminal. $1,000,000.

▲ Tex., Etter—PLANT—Phillips Petroleum Co., Etter, expansion to increase plant facility by 110 tons daily

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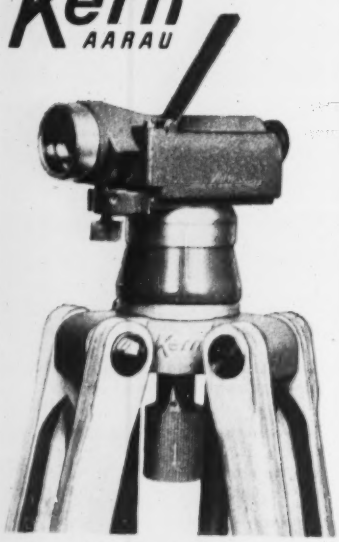

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of nitric acid production. $1,200,000. Chemical & Industrial Corp., 256 McCullough St., Cincinnati, O., consult. engrs.

▲ Tex., Montague—PLANT—Bowie Gas Co., c/o Dan T. McDonald, Montague, 20 m. cu. ft. capacity per day gas plant. $2,500,000.

▲ Tex., Orange—CHEMICAL PLANT—Spencer Chemical Co., 1004 Baltimore St., Kansas City, Mo., chemical plant to produce polyethylene and transparent packaging materials, 400-acre site south of city. $22,000,000. CD 3/4.

Va., Gretna—FEED MILL—Giles H. Vaden, III, Galveston Mills, Gretna, feed mill. $500,000.

▲ Va., Newport News—BUNKER STATION—Esso Standard Oil Co., 8201 Hampton Blvd., Norfolk, bunker station, consisting primarily of tankage and piping. $1,000,000. W. G. Otley, c/o owner, dist. mgr.

Wis., Milwaukee—BOTTLING PLANT—Pepsi-Cola Bottling Co., 946 N. 27 St., Zone 8, bottling plant. $400,000-$500,000.

▲ B. C., Kamloops—OIL REFINERY—Refinery Operators Ltd., Calgary, oil refinery of 5,000 bbl. per day capacity, $6,000,000.

▲ Que., Beauport East—PLANT—St. Lawrence Cement Ltd., c/o Surveyor & Associates, 1440 W. Ste. Catherine St., Montreal, plans by H. A. Doran, 5171 Blvd. Decarie, Montreal, cement plant. $5,000,000. M. Gilbert, 31 MacMahon St., Quebec City, engr. CD 3/2/52, under Atlas Co. Ltd. as owner.

▲ Que., Hull—MILL—E. B. Eddy Co. Ltd., Bridge St., tissue mill, Laurier Ave. $2,000,000. Stadler, Hurter & Co., 1117 Ste. Catherine St., Montreal, consult. engrs.

Que., Montreal East—PLANT—Canadian Gypsum Co., Ltd., 170 W. Bloor St., Toronto, Ont., plant on Ste. Jean de Dieu area. $500,000.

UNCLASSIFIED

Calif., San Francisco—TELEVISION STATION—American Broadcasting Co. 155 Montgomery St., plans by Pireira & Luckman, 9220 Sunset Blvd. Los Angeles, conversion of bldg. at 273 Golden Gate Ave. to radio and television bldg. $1,500,000.

Florida—RURAL DISTRIBUTION LINES—Escambia River Electric Co-operative, Jay, 90 mi. rural distr. line, some sys. imprvs., incl. 14 mi. 44 KV transmission line, Escambia Co. $385,000.

N. M., Albuquerque—TELEVISION STATION—New Mexico Broadcasting Co., Inc., (KGGM), Box 1294, television station, $448,000. A. Earl Cullum, Jr., Highland Park Village, Dallas 5, Tex., consult engr.

N. Y., Buffalo—TELEVISION STATION—Buffalo Courier-Express, Inc., (WEBR), 785 Main St., television station, $548,000. McIntosh & Inglis, Wyatt Bldg., Wash. 5, D. C. consult. engrs.

N. Y., New York—TELEVISION STATION—WNEW, Inc., 565 Fifth Ave., New York, Zone 17, television station, $640,000. Craven, Lohnes & Culver, Munsey Bldg., Wash. 4, D. C., consult. engrs.

N. Y., Niagara Falls—TELEVISION STATION Frontier Television, Inc., 21 Falls St., television station, $400,000. Craven, Lohnes & Culver, Munsey Bldg., Wash. 4, D. C., consult. engrs.

N. Y., Rochester—TELEVISION STATION—Meredith Eng. Co., 1716 Locust St., Des Moines, Ia., television station, $571,000. E. C. Page, Bond Bldg., Wash. 5, D. C., consult. engr.

Texas—HEADQUARTERS BLDG. REMODELING and RURAL DISTRIBUTION LINES—Lower Colorado River Electric Co-operative, Giddings, some headquarters bldg. remodeling and considerable electric distr. sys. expansion, Bastrop Co. $680,000.

▲ Washington—DISTRIBUTION FACILITIES, etc.—Pacific Power & Light Co., 920 S.W. 6 Ave., Portland, 4, Ore. distr. facilities, $100,000; service imprvs., $167,000; 2 new high voltage transmission line links, $14[illegible],000; exten. distr. facilities, $300,000; impr. existing service, $437,000. CD 10/21.

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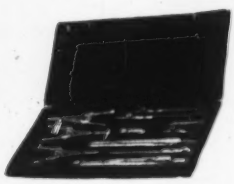

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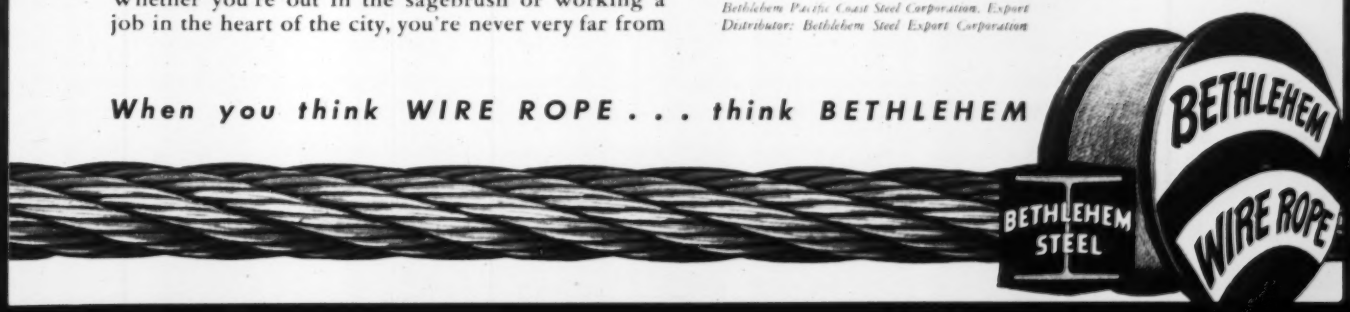

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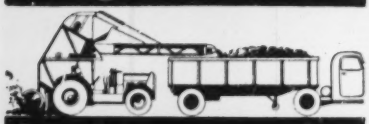
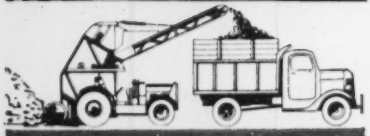


highest trucks



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The work which consists of grading, drainage and paving with reinforced concrete 50,816 ft of 24-ft wide, 8-in. deep highway was awarded to the low bidder, M. A. Gammino Constr. Co.

Cement finishers are receiving $2.90 per hr; carpenters, $2.50 per hr; and laborers, $1.85 per hr.

Bidders include:

1C	M. A. Gammino Constr. Co., Providence, R. I.	1,631,173
2	Campanella & Cardi Constr. Co., Inc., Hillsgrove, R. I.	1,734,316
5	P. Mitchell, Inc., Greenwich, Conn.	1,998,014

Bids: 2-9-53 Items	Unit	Quantity	Unit Prices 1C	2
Clearing & grubbing	ls	1	$30,000	$45,100
Earth excavation	cy	420,796	0.45	0.45
Rock excavation	cy	187,414	1.25	1.80
Bridge excavation	cy	1,986	18.00	2.50
Remove existing masonry	cy	182	10.00	13.00
Trench exc, 0'-6' deep	cy	11,854	1.40	1.50
Rock in trench exc, 0'-6' deep	cy	533	5.00	5.00
Trench exc, 0'-10' deep	cy	988	2.00	1.90
Rock in trench exc, 0'-10' deep	cy	100	7.00	10.00
Trench exc, 0'-15' deep	cy	40	6.00	7.50
Rock in trench exc, 0'-15' deep	cy	85	10.00	13.50
Ditch excavation	cy	1,190	1.50	1.50
Borrow	cy	38,198	0.33	0.55
Reinf conc pipe, 15"	lf	8,216	2.20	2.30
18"	lf	780	2.90	3.00
24"	lf	904	4.40	4.50
30"	lf	188	6.85	7.00
36"	lf	612	9.85	10.50
48"	lf	232	14.50	16.00
60"	lf	132	27.00	28.00
15" asph coated corr metal pipe	lf	1,236	3.00	3.10
24"	lf	116	5.75	5.60
15" asph coated corr metal pipe elbow	lf	108	7.48	9.50
U'drain w/6" perf	lf	11,266	2.40	2.50
U'drain w/15" perf ACCM pipe	lf	156	3.60	3.75
Found U' drain w/6" perf ACCM pipe	lf	5,102	2.40	2.30
Outlet for U'drain w/6" ACCM pipe	lf	3,054	1.20	1.15
Slope drain w/6" perf ACCM pipe	lf	2,280	3.40	3.75
Outlet for slope drain w/6" ACCM pipe	lf	104	1.75	1.50
Type "C" catch basin	ea	56	190.00	200.00
type "C-L"	ea	89	190.00	200.00
type "C-L" over 10' deep	ea	2	275.00	280.00
Manhole	ea	1	250.00	250.00
Reset manhole	ea	1	25.00	50.00
Conv catch basin to type "C-L" catch basin	ea	10	100.00	160.00
Conv catch basin to MH	ea	16	100.00	160.00
MH (with frame & cover state furnished)	ea	1	150.00	220.00
Steel sheet piles	lb	7,400	0.09	0.18
Portland cement	bbl	53,020	4.00	4.00
Natural cement	bbl	613	4.00	4.00
Cl "A" concrete	cy	2,396	35.00	35.00
½" prem bit joint filler for bridges	sf	1,373	0.50	0.50
Deformed steel bars	lb	276,245	0.10	0.10
Structural steel	lb	98,000	0.11	0.11
Membrane waterproofing	sy	62	2.75	3.00
Dampproofing	sy	2,392	0.50	0.50
Concrete bridge rail	lf	82.33	12.00	10.00
Gravel fill	cy	278	3.00	3.00
Compacted gravel fill	cy	640	2.00	3.00
Previous material	cy	6,796	0.80	0.75
Subbase	cy	85,502	0.75	0.69
Formation of subgrade	sy	144,637	0.10	0.10
Broken stone for base	ton	683	3.00	3.60
Rolled gravel base	cy	13,349	1.15	1.25
¾" prem bit expansion joint	lf	370	0.75	1.00
Transverse expansion joint	lf	11,700	1.25	1.25
Mat reinf for conc pvmnt	sy	140,525	0.44	0.48
Longitudinal joint support	ea	10,501	05.0	0.45

Bids: 2-9-53 Items	Unit	Quantity	Unit Prices 1C	2
Conc for pavement	cy	31,448	9.50	9.80
Bit concrete	ton	8,177		
A—hot asph conc pvmnt Cl I	ton	8,177		
B—dense graded bit conc pavement, Cl I	ton	8,177	9.70	7.50
C—cold laid asph conc pavement, Cl I	ton	8,177		
Broken stone for bit macadam pavement	ton	859	3.25	3.85
Reshape median	lf	50,331	0.25	0.25
Bit mat for bit mac pvmnt	gal	15,893	0.15	0.16
Service bridge	ea	20	400.00	500.00
Shaping & cleaning slopes	lf	41,373	0.40	0.40
Conc park curbing	lf	415	2.00	2.25
Install dowels for mall	ea	130	2.00	0.80
Install dowels for abutment	ea	300	2.00	0.80
Granite slope curbing	lf	1,055	2.33	2.20
Curved granite slope curbing	lf	70	3.20	3.10
Paved ditch	sy	2,299	4.00	2.45
Wire rope railing	lf	3,650	1.10	1.22
Type "B" anchorage	ea	10	38.00	42.00
Type "C" anchorage	ea	9	22.00	24.50
Compensating type anchorage	ea	109	29.00	33.00
Single pose	ea	165	6.50	7.20
Reset wire rope railing	lf	180	0.70	0.80
Reset "hiway security guard"	lf	800	3.00	5.50
Drilling weepholes in present structure	ea	116	2.00	4.25
Reset wire rope railing with new posts	lf	17,900	0.70	0.83
Riprap	ton	95	3.00	5.50
Slope paving	sy	80	5.00	6.00
Permanent barricade	lf	260	9.00	11.00

Toll bridge, Indiana

A $2,228,769 contract for the substructure, superstructure and toll houses on the Wabash Memorial Bridge, Mt. Vernon, Indiana was awarded to Traylor Bros., Evansville, Indiana by the Indiana State Toll Bridge Commission. Sverdrup & Parcel and T. D. Hunt, St. Louis are the engineers.

The 2,400-ft bridge is to have a 26-ft wide concrete roadway with 2-ft curbs. Main river spans are three-span continuous tied arch trusses 1,008 ft long with central span of 441 ft and side spans of 283.5 ft.

Minimum wage rates are: skilled labor $1.40 per hr; semi-skilled $1.25 per hr; and common labor, $1.15 per hr.

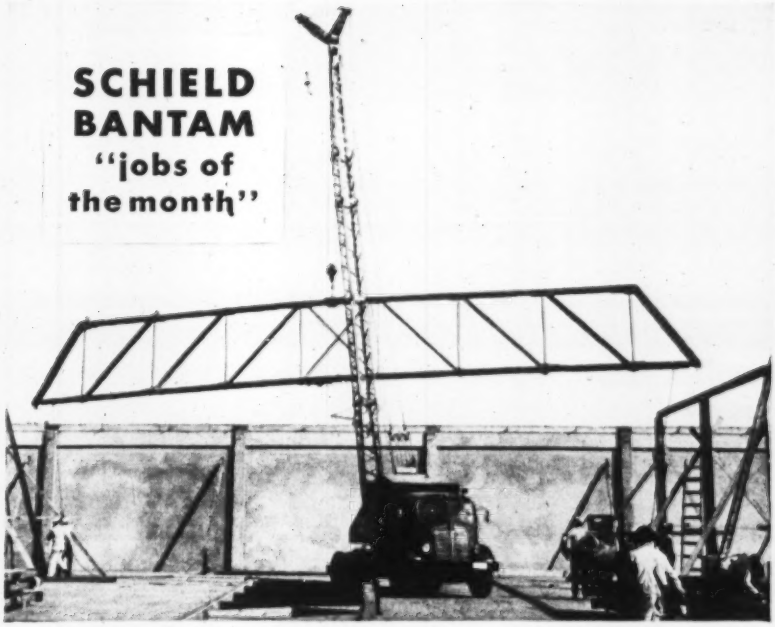
Bidders include:

1C	Traylor Brothers, Inc., Evansville, Ind.	$2,228,769
2	M. H. Mass Constr. Co., Algonquin, Ill.	2,170,537*
8	Ryan Constr. Corp., Evansville, Ind.	2,449,740

Bids: 12-16-52 Item	Unit	Quantity	Unit Prices 1C	2
Clearing of site	ls	1	$15,000	$25,000
Fndn exc, unclassified	cy	2,090	15.00	25.00
Furn equip for driving piles	ls	1	5,000	3,000
Stl piles, furn 12BP53	lf	12,198	5.00	5.00
Stl piles, driven 12BP53	lf	11,892	5.00	2.00
Pile loading test	ea	2	1,500	2,500
Cl D conc above footings & bases	cy	4,832	53.00	60.00
Cl E conc in footings (except in piers 7, 8, 9 & 10)	cy	437	50.00	55.00
Volume in bases of piers 7, 8, 9 & 10	cy	2,958	98.00	90.00
Stl reinf (substructure & superstructure)	lb	808,040	0.14	0.14
Finish & place limestone & brick facing at abutment 1	ls	1	2,400	1,000
Str stl	lb	4,248,000	0.21	0.21
Str low-alloy stl	lb	681,000	0.24	0.23
Pipe handrail	lf	4,796	15.00	14.00
Cl F conc in rdwy slab	cy	2,068	80.00	90.00
Cl roadway drains	lb	4,144	0.33	0.60
8" WI downspouts	lf	146	9.90	12.00
Toll house & office bldg	ls	1	74,900	.....

* No bid on toll house and office building.

SCHIELD BANTAM "jobs of the month"



EASY DOES IT — 70′ timber truss being "inched" into position by Schield Bantam truck crane on General Services Administration warehouse project, Seattle, Wash.

Huge timber trusses are set in record time with Bantam® method

SEATTLE, WASH. — Roy Proctor, owner of Cavanaugh Crane Service, discovered a new way to cut costs recently, by using a maneuverable Schield Bantam truck crane to erect all timber trusses for the *largest warehouse project in the Pacific Northwest.* Working with 50′ boom and 12′ jib, to negotiate the 590,000 sq. ft. building area, Proctor's Bantam *placed 444 seventy-foot trusses weighing 2 tons apiece, in just 37½ working days.*

Difficult spotting job

Bantam's dependable boom hoist, with *precision power-lowering,* proved indispensible in setting the unwieldy transverse timbers. Equipped with two 1″ bolt holes in steel clips at each end, timbers had to be "inched" into position, *so holes matched accurately with upright bolts atop concrete piers* — a quick, easy job with the Bantam's exacting load control feature.

Owner reports . . .

Proctor, who purchased his first Bantam truck crane two years ago, already has his second machine — claims Bantam *"outperforms any rig in its class on precision crane erection work."* Proctor has also discovered that Bantam's high speed mobility for job-to-job moves, saves time and money, . . . lets him handle more crane jobs per year at higher net earnings.

"Work-and-run specialist"

MILES CITY, MONT. — Dirk Doeden, popular local contractor, has developed a profitable service business, handling scattered excavating and crane jobs with *4 high-speed Bantam draglines.* On recent 100′ trench silo job, one Bantam excavated 1700 yds. of dirt in just 18 hrs. Maintenance costs have averaged only $45 annually per Bantam, over a 5-yr. period.

Road widening made easy

ELYSBURG, PA. — Contractors Reed & Kuhn used this mobile Bantam Back Hoe to speed cutting of 4′ wide ditches alongside State Route 15, north of Williamsport, Pa. Ditches were then filled with stone base and covered with LD-2 asphalt to widen the roadway for heavier traffic.

SB-E-1

Isn't it about time YOU checked into this versatile, low-cost tool?

When you consider *today's high hourly costs* of moving and operating big equipment, or hand labor crews, it's just plain common sense to have *at least one truck-mounted Bantam,* that can "run anywhere" and handle a wide variety of jobs at low cost.

New heavy-duty Bantam Model T-35 — with 6-ton crane rating and 8 fast-change attachments — solves this problem *at the lowest cost in the industry.* Ask your Bantam Distributor for a T-35 demonstration, or write today for free literature — just off the press!

SCHIELD BANTAM CO., 201 Park St., Waverly, Iowa.
World's largest producer of truck-mounted cranes and excavators

New T-35 Bantam Crane
sells for less than $6300.00
(plus truck & mounting charge)
FOB Waverly, Iowa
Includes complete 6-ton capacity crane unit, with 25′ boom, 12″ block 2 part line and extra cwt.

(Price subject to change without notice)

Build Functional and Distinctive Sewage Treatment Plants with Architectural Concrete

This sewage treatment plant in Centralia, Wash. exemplifies how architectural concrete combines functional qualities with distinctive appearance.

Centralia has a combined sanitary and storm sewer system. During the rainy season the sewage is given primary treatment only.

As a primary plant its capacity is 4½ m.g.d. and as a complete treatment plant 2 m.g.d.

Designers and engineers: Carey & Kramer, Seattle. Builder: A. G. Homann Co., Olympia.

Architectural concrete is an ideal construction material for sewage treatment plants. Its clean, neat appearance is a symbol of cleanliness and good municipal housekeeping. It makes the building a long-lasting asset and a source of community pride. It also offers:

1 UNUSUAL DURABILITY. It resists such destructive agents as severe weathering, fire, decay and sewage gases.

2 GREAT STRENGTH. It can be designed economically to withstand all vertical and horizontal forces.

3 REAL ECONOMY. Moderate first cost, low maintenance cost, long life = ***low annual cost.***

Investigate the advantages of architectural concrete for sewage treatment plants. Write for free literature, distributed only in U. S. and Canada.

PORTLAND CEMENT ASSOCIATION

DEPT. A4d-17, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

April 29 Maine

STREETS AND ROADS

April 28 Massachusets

Conn., Norwalk—B.A. 4/28—City, City Hall, trunk line sewer from Wall St. to New Canaan Ave. Bridge, $200,000. CD 3/12.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

April 30 New Jersey May 1 Pennsylvania
May 7 New York

STREETS AND ROADS

April 30, May 4, 6 New Jersey May 1 Pennsylvania
May 7 New York

† **N. Y., Syracuse**—FACILITIES—B.A. 5/12—U. S. Eng., 80 Lafayette St., New York, Zone 13, Air National Guard Facilities, Phase II, Vehicle sheds, firing-in butt and misc. paving, Hancock Feld, Serial No. Eng-30-075-53-401. $550,000. Plans deposit $10.

BIDS ASKED—BUILDINGS

▲ **N. Y., Groton**—SCHOOL, etc.—B.A. 4/24—Bd. Educ., Central School Dist. 1, Town of Groton, Groton, central grade and high school and bus garage, $1,250,000.

▲ **Md., Baltimore**—SCHOOL—B.A. 4/29—City, Bureau Bldg. Constr., 410 Municipal Bldg., brick, concrete, steel Carver Vocational High School. $2,500,000. Plans deposit $100. Wm. F. Stone, 2612 N. Charles St., archt. CD 2/7/45.

Md., Upper Marlboro — SCHOOL — B.A. 4/29 — Prince Georges Co. Bd. Educ., Glen Ridge Junior High School, Landover Hills, $500,000. Plans deposit $30. Paul H. Kean, 5109 Baltimore Ave., Hyattsville, archt. CD 2/11.

N. J., Morris Plains—HIGH SCHOOL—B.A. 5/12—Bd. Educ., Morris Plains, Junior High School. $880,000. CD 6/13/47.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **John Rosenblum, Inc.,** 1841 Broadway, New York, N. Y. CA. $777,619, addnl. facilities (FY 1953 Program), Phase I, Suffolk County Air Force Base, Serial No. Eng-30-075-53-292, WESTHAMPTON, N. Y., U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Mar. 12. CD 2/18.

▲ **NEW JERSEY**—N. J. Hy. Auth., State Hy. Dpt. Office Bldg., 1035 Parkway Ave., Trenton,
Union Bldg. & Constr. Co., 631 Main St., Passaic, N. J. CA $5,117,841, Contract No. 7, Section 7, grading, paving, draining Garden State Parkway from Keyport-Matawan Rd. in Matawan Twp. Monmouth Co. to Chevalier Ave. in Borough of Sayreville, Middlesex and Monmouth Counties, CD 3/25, under LB Streets and Roads; Contract No. 35, Section 7, bridges at Bordentown Turnpike Ernston Rd., Lawrence Harbor Rd., Cliffwood Ave., Main St., Matawan Relocation and culverts at Mohingson Brook and at Crossway Creek, other related work Garden State Parkway, Borough of Sayreville, Twps. of Madison and Matawan, Middlesex and Monmouth Counties, CD 3/25, under LB under Bridges. Bids Mar. 19.

▲ **NEW JERSEY**—N. J. Hy. Auth., State Hy. Dpt. Office Bldg., 1035 Parkway Ave., Trenton,
George M. Brewster & Sons, 275 W. Fort Lee Rd., Bogota, N. J., CA, $2,794,811, stabilization, grading, draining, paving, foundations for Section 7, Garden State Parkway from Pinebrook Rd. to W. Front St., Middletown Twp. and New Shrewsbury, Monmouth Co., Contract No. 9. Bids Mar. 26, awarded Apr. 9. CD 3/12, under LB.

▲† **Joseph Nebel Co.,** 2142 P St.-N.W., Wash., D.C. CA $1,288,000. XC-7 steam catapult facilities, Naval Air Station, NOY 18666, PATUXENT RIVER, MD. Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. CD 3/6, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Norman K. Winston-Holzer Assoc.,** 22 W. 48 St., New York 18, N. Y. Owner Builds. $29,000,000. Garden APARTMENT Project., 220 two story bldgs. for 3,700 families on 200-acre tract on Cross Island Parkway at Bell Blvd., to be called Bay Terrace Apartments, BAYSIDE, N. Y. Project to go up in series of 15 sections. First Section will comprise 726 suites. William M. Dowling, 350 Fifth Ave., New York 1, N. Y., archt.

▲ **Shinnecock Shores Homes,** c/o Klein & Parker, 1391 Northern Blvd., Roslyn, N. Y. Owner Builds. $2,500,000. 300 HOUSES on 200 acre tract on Sunrise Hy. and Shinnecock Bay, EAST QUOGUE, N. Y.

Oceancrest Estates, c/o Kavy & Kavovitt, archts., 44 Court St., Brooklyn 2, N. Y. Owner Builds. $756,000, 6 story APARTMENT, Beach Channel Dr., east of Beach 32 St., EDGEMERE, N. Y. CD 2/6.

▲ **George A. Fuller Co.,** 597 Madison Ave., New York, N. Y. CA. $1,500,000. 2 story, 80,000 sq. ft. brick, stone OFFICE, parking area, HARRISON, N. Y. All State Insurance Co., 3245 Arthington St., Chicago, Ill. Dunlap & Esgar, 333 N. Michigan St., Chicago, Ill., archts. Awarded Apr. 2.

▲ **Merrick Shores Homes,** c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, N. Y. Owner Builds. $1,800,000. 75 HOUSES, Merrick Rd., MERRICK, N. Y.

William M. Moore Bldg. Co., 75 W. 190 St., New York 63, N. Y., CA. $800,000. 11 story APARTMENT, 4-10 E. 89 St., NEW YORK, N. Y. Syndicate c/o H. I. Feldman, archt., 415 Lexington Ave., New York 17, N. Y.

▲ **Dale Park Homes,** c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds. $1,500,000. 120 HOUSES on tract at 249 St. and 145 Ave. ROSEDALE, N. Y.

▲ **Sherwood Gardens Homes,** c/o Matern & York, archts., 90-04 161 St., Jamaica, N. Y. Owner Builds. $1,800,000. 75 HOUSES, 20-acre tract, Jericho Turnpike and Powell's Lane, WESTBURY, N. Y.

Andrew Christensen & Son, Inc., 225 W. Grand St., Elizabeth, N. J., LB, $714,000, general construction, ADMINISTRATION bldg., for State Dpt. Education, on campus of State Teachers College, Hillwood Lakes, TRENTON, N. J. State Div. Purchase & Property, State House, Trenton, N. J. Bids Apr. 8. CD 3/10.

▲ **McCloskey Co.,** Liberty and Denny Sts., Pittsburgh, Pa., CA. Approx. $1,200,000. 1 story brick, block parochial SCHOOL, CHURCH, Ross Twp., McKnight Rd., PITTSBURGH, PA. St. Sebastian R. C. Congregation, McKnight and Seibert Rd., Pittsburgh, Pa. CD 12/17.

▲ **Joseph Skilken & Co.,** 44 E. Broad St., Columbus, O. CA. $5,000,000. brick, block, steel SHOPPING CENTER, Monroeville, PITTSBURGH, PA. Pittsburgh Miracle Mile, Town & County Shopping Center, 42 S. 4th St., Columbus, O. C. Melvin Frank, 43 W. Long St., Columbus, O., archt.

▲ **Gardens Constr. Co.,** 2406 Greenmount Ave., Baltimore, Md. LB $2,330,947. 1 story, 70x735 ft. Brooklyn Park Junior-Senior High SCHOOL, 87x160 ft. auditorium, 80x110 ft. gymnasium, 60x125 ft. cafeteria, library, 4 shops, ANNAPOLIS, MD. Annex Arundel Co. Bd. Educ., 207 Hanover St., Annapolis, Md. Bids Apr. 9. CD 3/27.

▲ **Day & Co.,** Easton, Md. LB $1,579,890, est. $1,500,000. 4 story, brick, steel HOSPITAL addn., incl. kitchen, dining room, power plant, EASTON, MD. Easton Memorial Hospital, Easton, Md. Bids Feb. 25. CD 2/3.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

May 1 Tennessee

STREETS AND ROADS

May 1 Tennessee

La., Lockport—B.A. 4/30—Lafourche Parish Water Dist. No. 1, City Hall water treatment plant, pumping stations, $500,000. Plans deposit $50. Bids 3/19 rejected. J. B. McCrary Co., Atlanta Federal Savings Bldg., Atlanta, Ga., engr. CD 3/25 under LB.

▲ **Tenn., Knoxville**—B.A. 7/1—City, City Hall, sewage disposal plant, $6,000,000. Greeley & Hansen, 220 S. State St., Chicago, Ill., engrs. CD 3/18.

BIDS ASKED—BUILDINGS

▲ **Va., Portsmouth**—HIGH SCHOOL—B.A. 5/22—Portsmouth School Bd., City Hall, 1, 2 and 3 story, bsmnt., approx. 3,600,000 cu. ft., Woodrow Wilson High School, $3,500,000. J. Binford Walford-O. Pendleton Wright, 103 E. Cary St., Richmond, archts. CD 11/25.

▲ **Ga., Atlanta**—CLASSROOM—B.A. 6/10—Bd. Regents University System of Georgia, 20 Ivy St. S. E., classroom bldg. at Atlanta Division of University of Georgia, $1,500,000. Cooper, Bond & Cooper, Henry Grady Bldg., archts.

Ga., Savannah—DORMITORY, etc.—B.A. 6/10—Bd. Regents, University System of Georgia, 20 Ivy St., S. E., Atlanta, dormitory, $550,000. Bergen & Bergen, 127 Habersham St., archts.; physical education bldg., $300,000, Aeck Associates, 140 Peachtree St. N.W., Atlanta, archts. Plans deposit $50 each, foregoing work at Savannah State College. CD 7/3.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **R. P. Farnsworth Co.,** 1515 S. Salcedo St., New Orleans, La., CA. $2,610,000. electric-electronics shop, at Charleston Naval Shipyard, CHARLESTON, S. C. Dpt. Navy, Officer in Charge of Constr., Naval Base, Charleston, S. C. Bids Feb. 12. CD 2/17, under LB.

† **Charleston Constructors, Inc.,** Adgers Wharf, Charleston, S. C., CA. $869,974, reinforcing concrete pier at Naval Ammunition Depot, NOY 75268, North CHARLESTON, S. C. Dpt. Navy, Officer in Charge of Construction, Box 365, Naval Base, Charleston, S. C. Bids Mar. 5. CD 311, under LB.

▲† **Ballenger Paving Co.,** Paris, Greenville, S. C. CA. $2,713,923, aircraft parking apron, etc., Hunter Air Force Base, Inv. 53-51, SAVANNAH, GA., U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids Apr. 8. CD 4/14, under LB.

Southern Bell Telephone Co., Hurt Bldg., Atlanta, Ga. Owner Builds. $700,000. telephone lines in East Lake area, BIRMINGHAM, ALA.

▲ **McDonough Constr. Co. of Georgia,** 7 Baltimore Pl., N.W., Atlanta, Ga., CA. $1,990,325, natural gas sys., CULLMAN, ALA. Cullman-Jefferson Gas District, City Hall, Cullman, Ala. Bids Mar. 23. CD 3/30, under LB.

▲ **City,** City Hall, Memphis, Tenn., cancelled bids to have been opened Dec. 15, underground auto parking garage, MEMPHIS, TENN. $1,250,000. WM., B. Fowler, c/o owner, city engr. CD 9/19.

▲† **R. P. Farnsworth & Co.,** 1515 S. Salcedo St., New Orleans, La., CA. $1,484,000. maintenance and operation hangar at Naval Air Station, NOY 71563, MEMPHIS, TENN. Dpt. Navy, Officer in Charge Constr., Naval Base, Charleston, S. C. Bids Apr. 1. CD 4/8, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Iron & Reynolds, Inc.,** 1724 H St. N.W., Wash., D. C., CA. $1,534,000, Wakefield Senior-Junior HIGH SCHOOL addn., ARLINGTON, VA. Arlington Co. Bd. Educ., 1426 N. Quincy St., Arlington, Va. Bids Apr. 16. CD 4/7.

▲ **J. W. Bateson Co., Inc.,** Irwin-Keasler Bldg., Dallas, Tex., CA, $1,325,475. 250 portable family units, Defense HOUSING Proj. 801, Camp Pickett, BLACKSTONE, VA. P. Housing Admin., 900 N. Lombardy St., Richmond, Va. Bids Mar. 24. CD 4/2, under LB.

▲ **Dan Dalis,** Forest Park Homes, 119 E. Sewells Pt. Rd., Norfolk, Va. Owner Builds. Approx. $1,000,000, 100 one story frame addnl. RESIDENCES in Forest Park Homes, NORFOLK, VA. E. Tucker Carlton, 1009 E. Main St., Richmond, Va., archt. CD 2/26.

▲ **Virginia Real Estate Co.,** 608 N. Sheppard St., Richmond, Va. Owner Builds. $1,071,000. 119 RESIDENCES, RICHMOND, VA.

Ruscon Constr. Co., 149 E. Bay St., Charleston, S. C. CA. $933,766, DORMITORY, CHARLESTON, S. C. Medical College of South Carolina, 16 Lucas St., Charleston, S. C. Bids Mar. 13. CD 3/25, under LB.

Arnold Constr. Co., Murray Bldg., Palm Beach, Fla., CA $969,177, Central Pinellas HIGH SCHOOL, CLEARWATER, FLA. Pinellas Co. Bd. P. Instruction, 305 Haven St., Clearwater, Fla. Bids Apr. 8. CD 4/14, under LB.

Gus P. Nichols Co., 741 Bayshore Dr., Fort Lauderdale, Fla. Owner Builds. $800,000. 100 RESIDENCES, FORT LAUDERDALE, FLA.

Broadus Contg. Co., 118 E. Adams St., Jacksonville, Fla., Owner Builds. $600,000, 42 RESIDENCES, JACKSONVILLE, FLA.

▲ **Ernest F. Shad, Inc.,** 1570 Atlantic Blvd., Jacksonville, Fla. Owner Builds. $5,000,000-$6,000,000. 700 RESIDENCES, JACKSONVILLE, FLA.

▲ **Tidewater Constr. Co.,** 538 Front St., Norfolk, Va. CA. $3,500,000 PLANT addns., MULBERY, FLA. F. S. Royster Guano Co., Royster Bldg., Norfolk, Va. CD 1/20, under Bartow, Fla.

▲ **Aurora Development Co.,** 5001 General Meyer Ave., New Orleans, La. Owner Builds. $1,200,000. 120 RESIDENCES, NEW ORLEANS, LA.

▲ **Harmon Constr. Co.,** 100 S. Indiana St., Oklahoma City, Okla., CA. $1,349,897, CHEMISTRY-PHYSIOLOGY BLDG. at University of Tennessee Medical School, MEMPHIS, TENN., University of Tennessee, Knoxville, Tenn. Bids Mar. 31. CD 4/10, under LB.

▲ **Wallace E. Johnson, Inc.,** 875 Rayner St., Memphis, Tenn. Owner Builds. $1,250,000. 113 RESIDENCES in Cherry Gardens Sub-station, MEMPHIS, TENN.

▲ **W. L. Hailey & Co.,** 314 42nd Ave. N., Nashville, Tenn., Owner Builds. $1,500,000. 275 RESIDENCES, NASHVILLE, TENN.

Albert Norris, H. Greer & Neil Barker, 1529 Demonbreun St., Nashville, Tenn. Owner Builds. $850,000. 140 RESIDENCES, NASHVILLE, TENN.

Pritchett & Co., 901½ 8th Ave. S., Nashville, Tenn. Owner Builds. $750,000. 124 RESIDENCES, NASHVILLE, TENN.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

April 28 Michigan, Wisconsin April 30 Indiana

STREETS AND ROADS

April 28 Wisconsin April 30 Indiana

BIDS ASKED—BUILDINGS

▲ **Ill., Chicago**—APARTMENT—B.A. 4/29—Harold L. Perlman Syndicate, 50 Beach St., Glencoe, 185-unit apartment, 1000 Lake Shore Dr. $4,500,000 Sidney Morris & Assocs., 134 N. La Salle St., Zone 2, archts. Shaw, Metz & Dolio, 208 S. LaSalle St., Zone 4, assoc. archts. CD 12/10.

Ill., Evanston—OFFICE B.A. 4/29—Rotary International, Ridge and Davis Sts., 2 story, bsmnt., 40,000 sq. ft. office bldg, $750,000. Maher & McGrew, 626 Grove St., archts. 9/4/52, under Industrial Buildings.

LABOR-SAVING *SPEED* FORMS

BEAT HIGH LABOR COSTS

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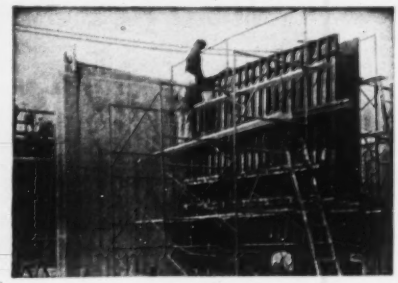

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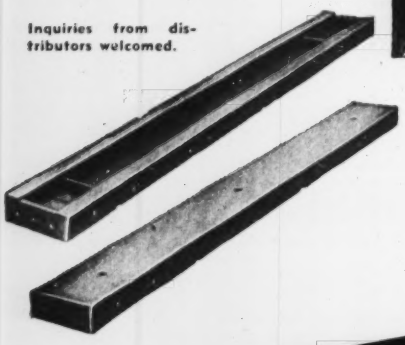

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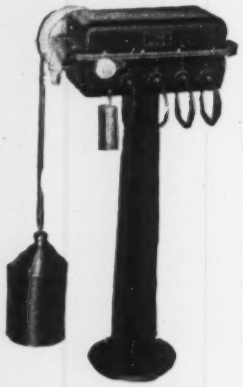

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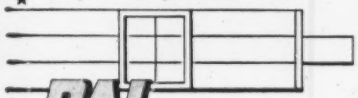

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HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Force Constr. Co., Columbus, Ind., CA, $500,000 dam for private lake, COLUMBUS, IND. Q. G. Noblitt, Columbus, Ind. Awarded Apr. 10.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **United Engineers & Constructors, Inc.**, 1401 Arch St., Phila., Pa., CA. Approx. $6,000,000. chemical PLANT to mfg. polyvinyl chloride resin, pilot plant, etc. northeast of ASHTABULA, O. General Tire & Rubber Co., 1708 Englewood St., Akron, O. Scientific Design Co., Inc., 2 Park Ave., New York, N. Y., charge of design and production facilities.

Leo Rueth & Sons, Inc., 1050 Cherry St., Hammond, Ind., LB, $674,237, 2 story, concrete, brick James Whitcomb Riley Elementary SCHOOL, HAMMOND, IND. School City of Hammond, 5935 Hohman Ave., Hammond, Ind. Bids Apr. 7. CD 3/23.

Broadview Building Corp., Noblesville, Ind., Owner Builds. $500,000. HOMES, NOBLESVILLE, IND.

Gawley Constr. Co., 7643 S. Kedzie St., Chicago, Ill., CA, $841,486, 2 story, bsmnt., steel, grade SCHOOL, 8010 S. Kostner St., CHICAGO, ILL. Bd. Educ., 228 N. La Salle St., Chicago, Ill. Bids Mar. 27, awarded Apr. 10. CD 4/7.

▲† **S. N. Nielsen Co.**, 3059 Augusta Blvd., Chicago, 22, Ill., LB, $1,267,690, 2 story bsmnt., concrete, brick Skinner Elementary SCHOOL and GYMNASIUM, CHICAGO, ILL. Bd. Educ., 228 N. La Salle St., Chicago, 1, Ill. Bids Apr. 10. CD 4/7.

Otto A. Schulz Co., 3114 Harrison St., Evanston, Ill., CA, $581,206, Junior High SCHOOL, Lincoln Ave., Scott and Franklin Sts., WHEATON, ILL. School District 36, 504 Naperville St., Wheaton, Ill. Bids Mar. 17, awarded Mar. 25. CD 4/6, under LB.

▲ **Selmer Co.**, 128 N. Pearl St., Green Bay, Wis., CA. Est. $1,000,000, general contract 4 story, 76x85 ft., 1 story, 55x58 ft., 1 story, 44x60 ft., HOSPITAL addns., GREEN BAY, WIS. Bellin Memorial Hospital, 742 S. Webster Ave., Green Bay, Wis. Bids Feb. 19, awarded Apr. 2. CD 1/27.

Albion Development Co., Albion, Mich. Owner Builds. $800,000. 80 single HOUSES, Thorp Sub-division, ALBION, MICH. CD 1/5.

▲ **Reniger Constr. Co.**, 127 N. Cedar St., Lansing, Mich. CA $3,274,375. general contract;
Hickey Shaw & Winkler, Inc., 14855 Ward St., Detroit, Mich. CA $617,241. mechanical contract for brick, steel, concrete, stone veterans' Memorial CIVIC CENTER, incl. auditorium, office, LANSING, MICH. City, Mayor Ralph W. Crego, City Hall, Lansing, Mich. CD 3/26, under LB.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
April 28 Colorado April 30 Kansas

BIDS ASKED—BUILDINGS

Neb., Omaha—DORMITORY, etc.—B.A. 5/1—Immanuel Hospital, 34 and Fowler Ave., nurses dormitory addn., school, $500,000. L. A. Daly & Co., Insurance Bldg., archts. CD 3/20/52.

▲ **Tex., Dallas**—HOTEL—B.A. 5/1—Hotel Statler Co., Inc., c/o Arthur F. Douglas, pres., 7 Ave. and 33 St., New York, N. Y., 900-room hotel, St. Paul and Commerce Sts. $15,000,000. Holabird & Root & Burgee, 180 N. Wabash St., Chicago, Ill., archts. CD 12/12.

Tex., Waco—LAW—B.A. 5/4—Baylor University, Waco, law bldg. $400,000. Stanley Bliss, Littlefield Bldg., Austin, archt. CD 12/18, under LB.

▲ **Tex., San Antonio**—TELEPHONE—B.A. 6/12 Southwestern Bell Telephone Co., 105 Auditorium Circle, 2 story on top existing 7 story telephone bldg., incl. penthouse. $1,250,000.

▲ **Tex., Austin**—OFFICE—Bids Asked—Lowich Investments, Inc., 1200 S. Erway St., Dallas, office, $2,000,000. CD 4/2.

SOON LETS CONTRACT—BUILDINGS

▲ **Neb., Omaha**—FACTORY—Continental Can Co., 7600 S. Racine St., Chicago, Ill., soon lets contract factory and warehouse, office, service bldg., boiler house, train shed, near here. $5,000,000. Bechtel Corp., 3780 Wilshire Blvd., Los Angeles, Calif., archts. CD 1/22.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Continental Utilities Constr. Co.**, 213 W. 13 St., Fort Worth, Tex., LB. $1,372,728, facilities "E", Amarillo Air Force Base, Inv. No. Eng. 34-066 53-101, AMARILLO, TEX. U. S. Eng., Box 61, Tulsa, 2, Okla. Bids Apr. 9. CD 3/26.

Uvalde Constr. Co., Box 3027, Dallas, Tex., CA. $513,316. sanitary and storm sewers in portion Preston Rd., DALLAS, TEX. City, City Hall, Main and Harwood Sts., Dallas, Tex. Bids Feb. 10. CD 3/11.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **C. O. Smith & Son Constr. Co.**, Osawatomie, Kan. Owner Builds. $2,000,000. HOUSING, HERINGTON, KAN.

Hara Corp., 2754 Delaware Pl., Tulsa, Okla. Owner Builds $800,000. 65 DWELLINGS, TULSA, OKLA.

Robert E. McKee, General Contractor, Inc., Box 562, El Paso, Tex., LB. $813,700. LIBRARY, EL PASO, TEX. City, El Paso, Tex. Bids Apr. 9. CD 3/18.

▲ Butcher & Sweeney, Inc., 805½ Taylor St., Fort Worth, Tex., CA., general constr.;

General Eng. Co., 118 S. Main St., Fort Worth, Tex. CA, plumbing, heating, electric, and air-conditioning, 1 story, 124x309 ft. leadstone, masonry CLUB HOUSE, 18-hole golf course, FORT WORTH, TEX. Est. $1,000,000. Westridge Golf Club Assoc., c/o Mr. Cowan, 118 S. Main St., Fort Worth, Tex. CD 12/12.

Linbeck Constr. Co., Box 18094, Houston, Tex., CA $618,290, LIBRARY and ADMINISTRATION, HOUSTON, TEX. St. Marys Seminary, 1018 Preston St., Houston, Tex. CD 3/31, under LB.

▲ Lembke Clough & King, Box 144, Albuquerque, N. M. LB $1,266,550, est. $750,000. 1 and 2 story, 47x728 ft. brick, concrete block HIGH SCHOOL, GYMNASIUM, ROSWELL, N. M. Roswell School Dist., c/o Grady Southworth, Roswell, N. M. Bids Apr. 2. CD 3/17.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

May 6 California

STREETS AND ROADS

May 5 Idaho May 6, 7 California

▲† Oregon—B.A. 5/2—U. S. Eng., Pittock Block, Portland, excav. for and constr. substructure for 14 main generating units, the station service unit and the assembly bay of the power house, approx. 1,000,000 cu. yd. excav. of rock; pouring 500,000 cu. yd. concrete, The Dalles Dam, Columbia River. Est. $40,000,000. CD 4/6 under LB.

▲† California—B.A. 5/8—U. S. Eng., 751 S. Figueroa St., Los Angeles, imprv. Tujunga Wash. from Lopez Dam to Arleta Ave., River Mile 6.43 to River Mill 2.93 Pacoima Wash channel, CIVENG-04-353-53-38. $1,600,000. CD 1/2/45.

BIDS ASKED—BUILDINGS

Wash., Richland—SCHOOL—B.A. 5/5—School Dist. 400, Richland 11 classroom, rein.-con., masonry freestanding addn. to Jefferson Elementary School, $875,000. Plans deposit $50. J. W. Maloney & J. H. Whitney, Larson Bldg., Yakima, archts. CD 10/1.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Arizona Sand & Rock Co., Box 596, Phoenix, Ariz., LB, $1,030,001, primary parallel NW/SE runway and taxiway, Williams Air Force Base, ENG-04-353-53-121, CHANDLER, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 10. CD 3/26.

▲ CALIFORNIA—State Div. Hys., P. Wks., Bldg., Sacramento,

A. Teichert & Son, Inc., 1931 Stockton Blvd., Sacramento, Calif., LB, $261,441, grading, surf. 3.1 mi. Pacific Ave. between Hammer Lane and Calaveras River Bridge San Joaquin Co.;

Ukropina-Polich-Kral, P. O. Box 105, San Gabriel, Calif., LB, $1,215,180, grading, paving, rein.-con. bridge 4 mi. between Yolo Causeway and Tower Bridge,-Yolo Co. Bids Apr. 8. CD 3/17.

▲ P. & J. Artukovich, Inc., 13305 S. San Pedro St., Los Angeles, Calif., LB $3,238,245, pipe line between Southern Ave. and Victoria St. for middle feeder of the Colorado River Distr. Sys., LOS ANGELES, CALIF. Metropolitan Water Dist. of Southern California, 306 West 3 St., Los Angeles, Calif., Bids Apr. 9. CD 3/26.

BUILDINGS

LOW BIDS AND CONTRACTS

Trewhitt, Schields & Fisher, 926 Parallel Ave., Fresno, Calif., CA $551,200, general contract RECREATION CENTER AUDITORIUM, Veterans Home, YOUNTVILLE, CALIF. State Div. Architecture; P. Wks. Bldg. Sacramento, Calif. Awarded Apr. 10. CD 8/30/45, under Calif., Sacramento.

Temple School Dist., 645 N. Durfee Ave., El Monte, Calif. rejected bids Mar. 18, Temple SCHOOL, EL MONTE, CALIF. LB $746,870. CD 3/27, under LB.

▲ Fluor Corp., Ltd., 2500 Atlantic St., Los Angeles, Calif., CA. $5,000,000. CATALYTIC CRACKING unit for oil refinery, EL SEGUNDO, CALIF., Standard Oil of California, 225 Bush St., San Francisco, Calif. CD 8/18/52.

▲ Housing Auth. of City of Los Angeles, 1401 E. First St., Los Angeles, Calif., cancelled bids to have been opened Apr. 8, Pacoima low rent HOUSING, LOS ANGELES, CALIF. Est. $1,000,000. CD 3/2.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

▲† Alta., Cold Lake—HANGARS—B.A. 4/28—Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont., two 160 ft. structural steel hangars at air force base, 1,000 tons of structural steel, $1,000,000. Plans deposit $100. CD 4/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Northern Constr. Co. & J. W. Stewart Ltd., 1304 Hornby St., Vancouver, B. C. CA Est. $8,000,000. dam at Bridge River, BRITISH COLUMBIA. British Columbia Co. Ltd., 425 Carrall St., Vancouver, B. C. CD 11/29/48.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ G. W. Golden Constr. Co. Ltd., 8925 82 St., Edmonton, Alta., Owner Builds. $2,500,000. 250 HOUSES in Idlwyde Subdivision, north of 82 Ave., EDMONTON, ALTA.

Kenney Constr. Co., Ltd., Box 380, Yarmouth, N. S. LB Est. $750,000. Maritime Warfare SCHOOL at H.M.C.S. Stadacona, HALIFAX, N. S. Defence Constr. Ltd., 1032 Gottingen St., Halifax, N. S. Bids Mar. 17. CD 2/26.

▲ Miller Constr. Co., 922 Waterloo St., London, Ont., Owner Builds. $1,250,000, four 2 story, brick APARTMENTS and 40 DWELLINGS, Wharncliffe Rd. at Essex St., LONDON, ONT.

▲ J. L. E. Price & Co. Ltd., 4 Collier St., Toronto, Ont., CA. $1,500,000, UNIVERSITY LIBRARY addn., TORONTO, ONT. University of Toronto, Simcoe Hall, Toronto, Ont. Bids Mar. 11. CD 2/13.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† Newbery Electric Co., 1038 Venice Blvd., Los Angeles, Calif., CA. $911,398. power tie line for new power house, Part 2, Inv. 53-81, Elmendorf Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Mar. 31, awarded Apr. 13. CD 4/9, under LB.

FOREIGN

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ George Wimpey & Co. Ltd., 23 Hammersmith Grove, London W 6, England, CA $5,320,000, 160 ft. high earth dam at Wemmershoek, 40 mi. north of CAPE TOWN, SOUTH AFRICA. City Council, Cape Town, South Africa. $8,400,000 pipe line contract will be let later.

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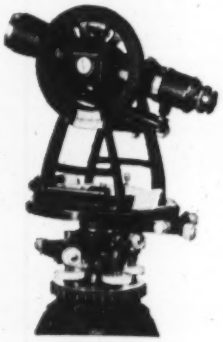

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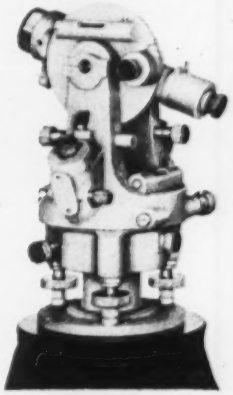

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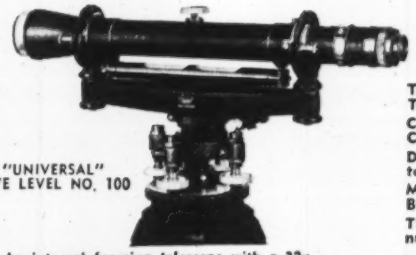

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The Ostermann Co., 2222 Woodward Avenue, Detroit 1, Mich.

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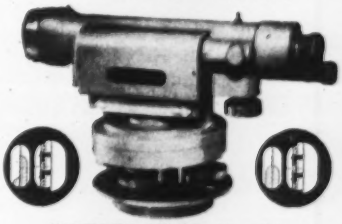

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Construction money gets more expensive as Washington considers rate boost

Early this week, Washington appeared on the brink of a decision as to whether or not to boost rates on government-guaranteed GI and FHA mortgages. Meanwhile, the mortgage market has been unsettled by: (1) the Federal National Mortgage Assn. decision to stop buying GI and FHA mortgages over the counter, and (2) a proposal by the House Appropriations Committee that Fannie Mae sell at least $1 billion of the mortgages it now holds, at a discount if necessary (page 22).

If Fannie Mae did sell such a large volume of mortgages at a discount, it would make it almost impossible for prospective home-builders to borrow to get GI or FHA mortgages anywhere in the U.S. at present rates. Mortgage bankers point out that life insurance companies, savings banks, and other big buyers of mortgages might prefer to buy them in big blocks from Fannie Mae than through the usual market channels—if the price is right.

• **Tipoffs**—No matter what happens to GI and FHA mortgages, other types of construction financing are certain to cost more. Tipoff signals are breaking out all over, as the Treasury this week successfully sold its $1 billion of 3¼% long-term bonds.

Short-term money, which builders need for construction loans, is tight. The best indicator of this is the "bill rate"—what it costs the Treasury to borrow money when it puts out its weekly issue of 91-day bills. Last week, the rate was 2.22%, higher than it has been in 20 years (except during the "money pinch" last Christmas).

• **Bank loans**—Bank money is costing more, too. Bankers are talking about shoving up the "prime rate" on short-term loans to blue-ribbon borrowers from 3% to 3¼%. For many months, they've been getting more choosy about who is a blue-ribbon borrower. A boost in the prime rate would affect all bank loans.

New York City banks have just boosted the interest rate they charge securities brokers and dealers on "call" loans—from 2¾% to 3%. As the name suggests, "call" loans must be repaid on demand. Brokers and dealers borrow to carry inventories of securities.

Last week, too, commercial-paper dealers boosted their rates from 2⅜% to 2½%, the second ⅛% hike in the past few weeks. Commercial paper is Wall Street terminology for unsecured short-term notes of blue-ribbon borrowers, sold to dealers for resale in the open market.

• **Mortgage bonds**—Long-term corporate bonds—a major source of construction money—have to offer a higher interest rate in order to sell. Last week, for instance, Texas Electric Service Co. paid a net interest cost of 3.56% to underwriters who took an issue of 30-year mortgage bonds. Back on March 24, a comparable issue by Dallas Power & Light Co. cost 3.43%—a sizeable jump for so short a period of time.

Highway cost index drops

Competitive bidding by contractors for California highway contracts has driven down the California Highway Construction Index, in spite of higher costs of construction materials.

The index dropped 3.5% during the first quarter of 1953 to 218.3 (1940 = 100). This was due almost entirely to a 32% drop in the cost of roadway excavation. The reason seems to be that bidders who completed jobs during the fall and early winter bid low on highway projects to insure getting jobs during the coming construction season.

Machinery and materials up

Prices of construction machinery rose to an all-time high in March, according to the Bureau of Labor Statistics. The BLS index is now 126.9 (1913 equals 100). This is a gain of 0.6% from February, and up 1.6% from March, 1952.

The biggest gains during March were in prices of tractors and in the category of power cranes and shovels. There was a slight increase in mixers and pavers, and in specialized construction machinery. Scrapers and graders got a little cheaper. Prices of trucks (which are not included in the index) gained slightly.

Reflecting boosts in prices of materials, as controls came off (ENR April 9, p. 102) BLS wholesale price index of building materials rose 0.4% during March. The index is at 119.2 for March (1947-1949 equals 100). This is 1% above a year ago but it's still 1.4% under the record set in April, 1952.

U.S. business: the big picture

While total contract awards reported by Engineering News-Record in March were well ahead of last year (ENR Apr. 9, p. 101), they did taper off somewhat from the gains of January and February. Much the same is true of U.S. industry in general. Judging by the usual indicators, business activity continues at boom levels. But some cautionary signs are popping up.

- **In March, for the seventh straight month, the Federal Reserve Board's index of industrial production hit a new postwar high.**
- **About 1.7 million more people were working in mid-March than a year ago.**
- **February retail sales were better than January's, and up about 10% from a year ago.**
- **Personal income in January and February was at an annual rate of $280.5 billion, up 6% from 1952. But February income dropped slightly below January, because of a decline in farmers' income caused by lower prices of agricultural products.**
- **Business inventories increased $350 million in February, carrying on a trend that became obvious in the last quarter of 1952. This buildup in inventories indicates that industry is putting out goods faster than customers will buy them. If this goes on long enough, it could lead to sharp production cutbacks. The buildup is in durable goods, mostly at the retail level.**
- **Total consumer debt was $23.5 billion at the end of February, up about $4 billion from a year ago. The fact that many consumers are loaded with debt may be one reason why many home appliance dealers are reporting slow sales, and why used-car prices are weak although spring is usually the peak sales season for cars.**
- **Competition in the new-car field has led Chrysler Corp. to cut prices of all its cars by an average of $100.**
- **Bankers in some parts of the U.S. say that installment buyers are slowing up on their payments. Some lenders report that as much as 10% of their monthly installment payments are more than 30 days past due.**

Steelmaker won't build, says costs are too high

"With construction costs as they are today, building a completely new steel plant could not be made to pay unless selling prices were considerably higher." That's what W. W. Sebald, president of Armco Steel Corp., said last week when he dedicated a new $40-million blast furnace and coke oven at Middletown, Ohio.

Sebald said that Armco could afford to add to and round out existing facilities without too high an investment cost per ton of capacity. "However," he added, "that would not be the case if we had to start from the ground up."

Some day, Armco's president said, the company would build a new plant at Middletown. "We have the land, and the rough plans are made." But he indicated it would have to wait until construction costs come down or steel prices go up substantially.

Later last week, Sebald told stockholders at the annual meeting that Armco is studying its current prices and expects to boost some before long.

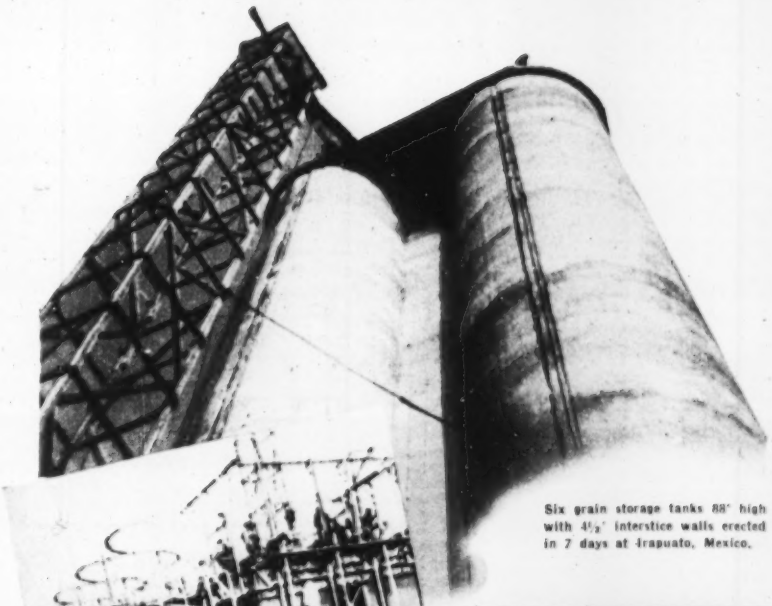
118-mile gold mine: that's Jersey Turnpike

It's no news to anybody that the New Jersey Turnpike is turning out to be more of a money-maker than even the most optimistic planner expected. But the 1952 annual report of the turnpike commissioners spells out just how much actual operations have exceeded the engineering estimates.

In 1952, over 18 million vehicles used the turnpike. The engineers' estimate, made in 1949, was that 7.6 million vehicles would roll on the turnpike in 1952. The estimate was that the turnpike wouldn't carry an annual volume of 18 million until 1968.

• **Up 127%**—Toll revenues in 1952 were about $16.2 million, 127% higher than the estimate. Including revenues from concessionaires and miscellaneous other income, totaling $1.6 million, overall revenues from operations in 1952 were $17.8 million. After paying expenses and interest charges, the turnpike had a surplus of $7.3 million.

Although the commissioners say that accidents on the turnpike last year were only one-fifth of those for parallel highways, in proportion to traffic, they aren't satisfied with the safety record. They plan to cut down on accidents by strict enforcement of speed limits and by other safety measures.



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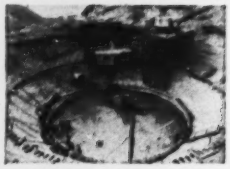

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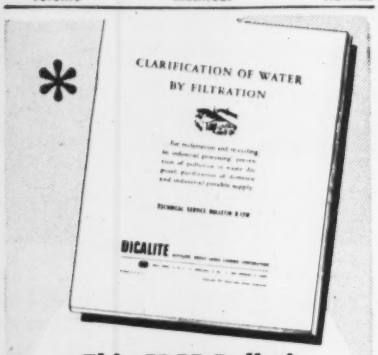
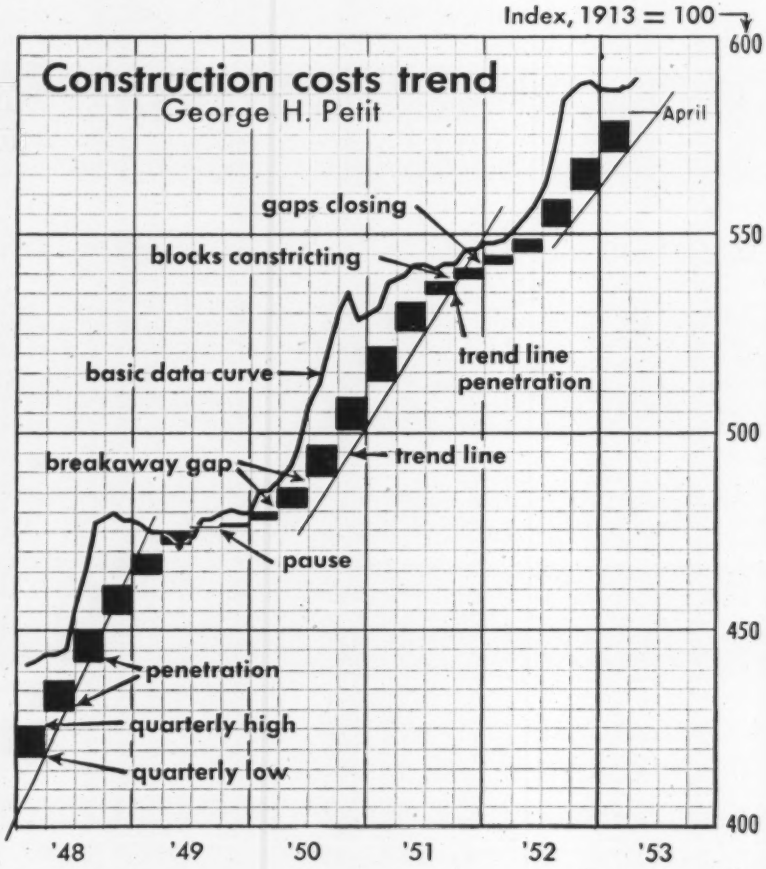


This FREE Bulletin Gives Valuable Data on Water Filtration . . .

Many problems in the reclamation or recycling of water in industrial processing, in the prevention of pollution in waste disposal and in the purification of potable supply are answered in DICALITE'S BULLETIN B-12-W—"Clarification of Water by Filtration."

*Write for your free copy

DICALITE DIVISION • Great Lakes Carbon Corporation, Dept. EN, 612 S. Flower St., Los Angeles 17, Calif.



Petit Theory: It predicts that costs of construction will keep going up

Last September, ENGINEERING NEWS-RECORD introduced to its readers a method of forecasting future long-range trends in construction costs (ENR Sept. 4, '52, p. 98). This theory, worked out by engineer George H. Petit, is based on ENR's Construction Cost Index, and attempts to predict how this index will move.

For the rest of 1953, the theory indicates that construction costs will keep on rising, but that this rise may be less than in 1952 (chart, above). Last year, ENR's Construction Cost Index went up 7.3%. (ENR's February prediction was that it would rise no more than 4% this year [Feb. 19, p. 53].)

Here's how Petit makes his chart: For each month, he figures out a 12-month moving average of ENR's Construction Cost Index. The purpose of the moving average is to iron out temporary ups and downs, so that the long-range trend will be clear.

Then the chartmaker builds his black blocks by taking, in each quarter, the highest and lowest points of the moving average for that quarter. These points are plotted on graph paper, and the space between the high and the low points filled in solidly to make the blocks.

So far, the blocks restate only what has happened to ENR's Construction Cost Index—the heavy black line. But if the blocks start to get wider, Petit believes they show that the cost trend (whether up or down) is picking up momentum. If they get narrower, they indicate the trend is losing steam.

Further, as the blocks are plotted on the graph, what Petit calls "break-away gaps" may appear between them. If these gaps are getting wider, the cost trend is picking up speed. If they are getting narrower, the trend is slowing down.

• **What's doing now**—That's what is

happening now. The blocks are continuing to rise, but they are getting narrower and the gaps between them are narrowing slightly. In Petit's book, that shows the price rise is losing a little momentum. (The single month of April doesn't count as a block, but helps show the direction of the trend.)

But Petit would say that something else will have to happen before this becomes a firm forecast that costs will continue to slow down. The "trend line," drawn along the bottoms of the blocks, must start to "penetrate" succeeding blocks and get closer to the heavy black line (ENR's monthly Construction Cost Index) before the slowdown is "confirmed."

By looking at the chart, you can see that the trend line did this in 1948 and in the last half of 1951, and that a period of relatively stable prices followed.

In ENR's previous article on the Petit theory, his chart was carried back to 1915, showing a remarkable record of predicting future trends in the Construction Cost Index. You also can consult that article for a more detailed explanation of his method.

Bigger profits expected by Combustion Engineering

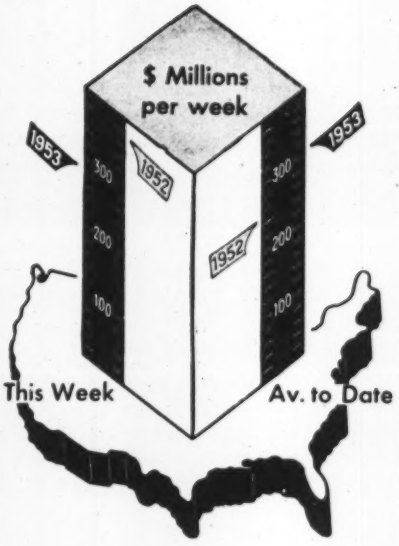
Combustion Engineering-Superheater, Inc., has changed its name and elected a new president. The new name: Combustion Engineering, Inc. The new president: Martens H. Isenberg, who moves up from executive vice-president to succeed Joseph V. Santry. Santry has become board chairman, replacing Samuel G. Allen, who will continue as chairman of the executive committee.

Santry told the annual stockholders' meeting last week that although the yearend backlog was almost $214 million, new business continued to be disappointing. In the first quarter, new business was less than 50% of the corresponding period in 1952 and 1951. Santry also noted that first-quarter billings and earnings will be about 10% under the 1952 period.

However, Santry said he expected Combustion Engineering to make $6.5 million in 1953 on estimated billings of $155 million. Last year, the company earned $5.9 million on billings of $138 million.

Activity This Week

As reported to ENR
(in millions of dollars)



Amount of contracts let

	This Week	Cumulative 17 wks 1953	1952	% chge
Federal	$25.7	$518.8	$622.0	−16
State and Municipal	92.9	1,588.9	1,313.6	−1
Total pub.	118.6	2,107.7	1,935.6	−4
Total priv.	169.3	3,102.0	2,272.8	−7
U. S. Total	$287.9	$5,209.7	$4,208.4	+24

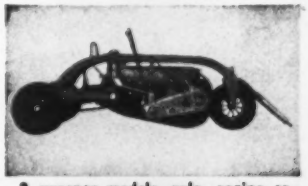
Contracts by type of work

Waterworks	$6.6	$84.3	$81.5	+3
Sewerage	6.4	111.6	72.8	+53
Bridges	4.1	265.5	114.4	+132
Highways	31.8	447.4	415.5	+8
Earthwork, Waterways	2.8	118.3	180.8	−35
Buildings: Public, excl. hsg.	37.1	554.9	537.2	+3
Housg., pub.	7.1	228.6	328.1	−30
Housg., priv.	100.3	1,359.3	916.3	+48
Commercial	28.9	319.6	167.0	+91
Industrial	31.9	1,186.3	967.6	+23
Unclassified	30.9	533.9	427.2	+25
Total	$287.9	$5,209.7	$4,208.4	+24

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

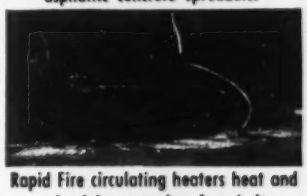
ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost.	Apr.	589.53	283.39	123.59
	Mar.	587.44	282.38	123.15
Bldg. cost.	Apr.	426.45	230.53	121.22
	Mar.	424.89	229.68	120.78
Volume	Mar.	547	222	158

GRACE
Asphalt and Compaction Equipment



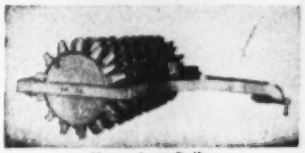
3 sweeper models, axle, engine or tractor powered.

Chip spreaders 8' to 12' width. Also asphaltic concrete spreaders.



Rapid Fire circulating heaters heat and unload large tanks of asphalt.

Rapidspray Maintenance Distributors. Also heaters for production melting of barreled asphalt.



Sheepsfoot Rollers
250 to 600 psi.

Pneumatic rollers
7 to 50 tons.

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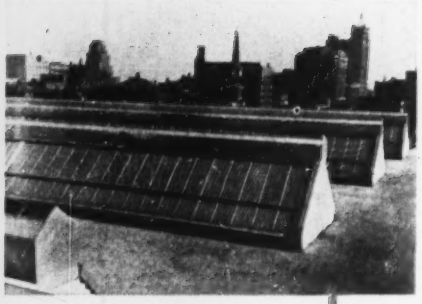
lighten your overhead

with **PENNSYLVANIA ORIGINAL CORRUGATED WIRE GLASS**



When you specify Original Pennsylvania Corrugated Wire Glass, you build in vital benefits that will see your building through years of function, handsomeness and low-cost maintenance.

- You build in Efficient Lighting . . softly diffused daylight in either white or heat absorbing actinic glass, eliminating harsh shadows, glare
- You build in Low Maintenance . . . a skylight with nothing to corrode, nothing to replace, nothing to re-paint
- You build in Structural Strength . . . heavy, corrugated glass, with wire encased, standing firm under the most punishing machinery vibrations

Original Pennsylvania Corrugated Wire Glass Construction is a complete unit of glass and sheet metal parts. Standard width sheets measure 27¼" Installation is made without supplementary frames—Corrugated Wire Glass is applied directly on wood, steel or concrete.

Write to Dep't. E 43 for your FREE copy of Catalog 16A for illustrated suggestions on the use of Original Pennsylvania Corrugated Wire Glass in Skylights and Sawtooth Constructions. Or—send us a rough sketch of your problem. Our engineers will gladly suggest a solution.

SEE OUR CATALOG IN SWEET'S

PENNSYLVANIA WIRE GLASS COMPANY

1612 MARKET ST. PHILA. 3, PA.

Representatives in Principal Cities

Keep jobs on Schedule with TULSA WINCH...*

To get equipment where it's needed, when it's needed, safely and efficiently, is no longer a major problem with contractors . . . they rely on Tulsa Winch to do the job. Whether you're moving power shovels or light timbers, there is a Tulsa Winch for every make and model of truck and crawler tractor in capacities from 6,500 to 80,000 lbs.

Tulsa* Winch
TULSA, OKLAHOMA DIVISION OF VICKERS Inc

*Reg. U. S. Pat. Off.

OFFICIAL PROPOSALS

Bids: May 7, 1953

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 7th day of May 1953, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. NICKERSON, District Engineer, 353 Broadway, Albany, New York				
Wash. & Saratoga	R.C. 53-35	Northumberland Bridge	0.10	Repairs and Painting Exist. 530' Truss Bridge	$6,000 Plans $10	$103,000
		DISTRICT No. 2				
		L. KETCHUM, District Engineer, 109 No. Genesee St., Utica, New York				
Fulton	F.A.C. 53-10 F.A.R.C. 53-30	City of Johnstown Route 148 By-Pass (Chestnut St. to East Main St. and Briggs St. to E. City Line); Fonda-Johnstown, S. H. 5096 Project U-419(5)	2.87	Asphalt Conc. Ty. 1A, Opt.	45,000 Plans $15	790,000
Oneida	M.T. 53-7 S.T. 53-19	New York State Thruway, Mohawk Section Sub. 8 (Whitesboro-Utica West City Line); Woods Rd.; Mohawk St. C. R. 107 & Special Drive	4.03 Thy. 1.11 Acc.	9" Cem. Conc. Pavt. 2 @ 25' Wide = 4.23 Mi. Asp. Conc. Ty. 1A, Opt = 0.40 Mi. Found. Crse. Grav. = 0.70 Mi. Misc. Work = 0.01 Mi. 2 Hy. Seps. Comp. I-Beams 148.8' and 110' 1 RR Sep. Plate Girder 228.9' 1 RR Sep. Comp. I-Beam 572' 2 Brs. Plate Girders 380' and 346' 1 Br. Closed Box 32.8'	400,000 Plans $100	7,412,000
		DISTRICT No. 3				
		WILLIAM ROBINSON, District Engineer, Weigh Lock Bldg., Syracuse, New York				
Onondaga	M.T. 53-8 O.T. 53-8 S.T. 53-36 R.C. 53-36	New York State Thruway, Mohawk Section, Sub. 8B and Ontario Section Sub. 8A (Electronic Pkwy. & Thompson Rd.); 2 Interchanges; 4 Access Roads; Syracuse-Bridgeport Pt. 1, S. H. 672	1.57 Thy. 5.01 Acc.	9" Cem. Conc. Pavt. 24' Var. Wide = 4.16 Mi. Asp. Conc. Ty. 1A, Opt.= 0.37 Mi. Found. Crse. Grav.= 0.20 Mi. Misc. Work = 1.85 Mi. 4 Hy. Seps. comp. I-Beams 198', 205', 196.7' & 220.5'	$100,000 Plans $50	1,768,000
Wayne	R.C. 53-32	Various Highways in Wayne County	....	Tree Removal of 143 Trees and Pruning of 300 Trees	$ 800 No Plans Prop. $2	14,000
		DISTRICT No. 4				
		E. G. H. YOUNGMANN, Barge Canal Terminal, Rochester, New York				
Monroe	F.A.C.G. 53-11	Rochester City: Inner Loop (Genesee River) Bridge and Approaches Project U-UG-231(3)	0.36	Asp. Conc. Type 2A R. R. & River Viaduct 1187'	$170,000 Plans $25	2,976,000
Ontario	O.T. 53-7 S.T. 53-18 R.C. 53-34	New York State Thruway, Ontario Section Sub. 12 Rochester East-Rte. N. Y. 96 Interchange; Willow Rd.; Pittsford-Victor Pt. 2 S. H. 8223	1.10 Thy. 4.26 Acc.	9" Cem. Conc. Pavt. 12'-44' Var Wide = 2.80 Mi. Found. Crse. Grav. = 0.03 Mi. Asp. Conc. Ty. 1A, Opt.= 0.15 Mi. Misc. Work = 2.38 Mi. Hy. Sep. Comp. I-Beam 217' Hy. Sep. Closed Box 24.2' Hy. Sep. Extend. Exist. 18.3' Closed Box	$52,000 Plans $25	945,000
		DISTRICT No. 5				
		C. R. WATERS, District Engineer, State Office Bldg. Buffalo, New York				
Erie	G.I.S.P. 53-1	Grand Island State Parkway; South Parkway Extension (Beaver Island State Park)	2.80	Asp. Conc. Type 1A, Opt. Including Toll Houses Parking Areas, Electrical & Misc. Work	$25,000 Plans $15	452,000
		DISTRICT No. 6				
		JAMES H. THOMAS, District Engineer, State Office Bldg., Hornell, New York				
Steuben	F.A.S.S. 53-4	Coopers Plains-Monterey C. R. 26 Project S-738(2)	0.25	Asp. Conc. Ty. 1A, Opt.= 0.22 Mi. Misc. Work = 0.03 Mi. Re-Erect 155' Sp. Thru Truss	$9,500 Plans $10	172,000
		DISTRICT No. 8				
		J. S. BIXBY, District Engineer Pleasant Valley Road, Poughkeepsie New York				
Columbia	R.C. 53-31	Various Highway in Columbia County	....	Tree Removal of 173 Trees	$800 Plans $10	14,000
Orange & Ulster	C.T. 53-9 S.T. 53-21 RC. 53-37	New York State Thruway, Catskill Section-Sub. 5 (Newburgh-New Paltz Pts. 1 & 2); 1 Interchange 10 Access Rds.; Cocheeton Turnpike Pt. 1 S.H. 113; Newburg-Shawangunk S. H. 161; Plattekille-Modena S. H. 307	16.52 Thy. 7.88 Acc.	9" Cem. Conc. 2 @ 25' Wide = 19.37 Mi. Asph. Conc. Ty. 1A, Opt.= 3.51 Mi. Found. Crse. Gravel = 0.88 Mi. Misc. Work = 0.64 Mi. 1 Hy. Sep. Conc. Rigid Frame 31' 1 Br. Closed Conc. Box 30' 1 RR Sep. Comp. I-Beam 199.5' 11 Hy. Seps. Comp. I-Beams 212.3', 133', 202.8', 212.8', 219.9', 288.5', 205.9', 231.9', 45', 166.3', and 207.7'	$690,000 Plans $100	12,504,000
Rockland	Pip 53-1 RC. 53-29	Pallisades Interstate Parkway, Sect. 2 & Pt. 1 Coyles Corners-Short Cove, S. H. 9005 Valley Spring-Mount Ivy, S. H. 1019	5.05 Pky. 4.18 Acc.	Grading = 5.45 Mi. 8" & 9" Cem. Conc. Pavt. 24' Var. Wide = 0.78 Mi. Asp. Conc. Ty. 1A, Opt.= 1.89 Mi. Bit. D. S. T. Graded Gravel = 1.11 Mi. 6 Hy. Seps. Rigid Frame Arches 135.7', 119.3', 122.7', 107', 48.4' and 115.9'	$200,000 Plans $100	3,497,000
		DISTRICT No. 10				
		M. GOUL, District Engineer, Montauk Highway at Little East Neck Rd., Babylon, Long Island, N. Y.				
Queens	FAVWE 53-1 FAGCP 53-1	Grand Central Parkway; Van Wyck Expressway Connection; Van Wyck Expressway (Cont. 17) Project U-741(21); U-658(20); U-1085(15)	4.31	Directional Signs and Misc. Work	$8,000 Plans $10	106,000
Bronx	FAMDE 53-3	Major Deegan Expressway Contract 7A Project U-UI-1082(14)	0.47	Grading, Drainage Walls & Misc. Work 2 Hy. Seps. Comp. I-Beams 166.2' & 97' I-Beam Viaduct 656'	$173,000 Plans $100	3,150,000
Suffolk	B.P. 53-40 and 41	Fireplace and Crabmeadow Beaches	....	Beach Protection 4 Conc. Block Groins	5% of Bid Plans $10	63,660

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

R. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: May 5, 1953

WEST VIRGINIA TURNPIKE COMMISSION
ADVERTISEMENT FOR PROPOSALS

Sealed proposals will be received by the West Virginia Turnpike Commission for:

Contract No. 21

The work to be done under this contract consists in performing the required grading and drainage for approximately 6.32 miles of the West Virginia Turnpike including the relocation of approximately 3.83 miles of U. S. Route 19-21 and approximately 1.75 miles of other side roads including the temporary relocation of sections of existing U. S. Route 19-21 plus the construction of the substructures for bridges known as structures 10 and 12. This work is located between a point 3 miles north of Camp Creek about mile 13.7 and the village of Ghent mile 20, Mercer and Raleigh Counties, West Virginia, and is in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

The principal items of work include:

	Approximate Quantity
Clearing and Grubbing	65 acres
Excavation (all types) Including Borrow	2,775,000 c. y.
Concrete	1,800 c. y.
Reinforcing Steel	108,000 lbs.
Culvert Pipes and Underdrains	81,400 lin. ft.
Relocation of U. S. Route 19-21	
Hot-Laid Asphaltic Concrete Surface Course	5,400 tons
Penetration Macadam Aggregate	15,300 tons
Base Course Material	14,700 c. y.
Guard Rail	14,300 lin. ft.

Proposals will be received at the office of the West Virginia Turnpike Commission, 1340 Wilson Street, Charleston 5, West Virginia until 9:00 A.M. Eastern Standard Time, and thereafter at the House of Delegates Chamber, State Capitol, Charleston, West Virginia until 10:00 A.M. Eastern Standard Time, on May 5, 1953, at which time and place said proposals will be publicly opened and read.

WEST VIRGINIA TURNPIKE COMMISSION
D. H. Morton
Chairman

OFFICIAL PROPOSALS

Bids: May 25, 1953

A Refuse Incinerating Plant

THE CITY OF EDMONTON
TENDERS FOR

Separate sealed proposals are invited by the City of Edmonton for the construction of a Refuse Incinerating Plant and will be received by the City Commissioners, 301 Civic Block, Edmonton, Alberta, not later than Noon, MONDAY, MAY 25th, 1953.

The work is divided into four separate contracts:

(a) General Contract including separate bids for: (i) the building, (ii) Plumbing Heating and Ventilating, (iii) Electrical.
(b) Incinerator Radial Chimney Contract.
(c) Crane Contract (now out to tender, tender date May 4, 1953).
(d) Incinerating Furnaces and their Appurtenances Contract.

Tenders shall be accompanied by a certified cheque equal to five (5%) percent of the tender or by a bid bond equal to twenty-five (25%) percent of the tender.

The location of the proposed plant is the existing incineration site at approximately 97 Street and 97 Avenue, Edmonton.

Plans and specifications and all information may be obtained (Wednesday, April 22 and thereafter) at the office of the City Architect, 501 Civic Block, upon deposit of a marked cheque in the amount of twenty-five ($25.00) dollars, made payable to the City of Edmonton. Cheques may be recovered upon return of plans and Specifications in good condition.

Suppliers and sub-trade contractors may inspect the drawings and specifications during office hours at the office of the Edmonton Builder's Exchange.

The lowest or any tender not necessarily accepted.

City Commissioners,
301 Civic Block,
EDMONTON, Alberta.

Bids: May 6, 1953

Route 46 (1953), Section 1B

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Route 46 (1953), Section 1B, from Dunnfield to Columbia, Paving, Pahaquarry and Knowlton Townships, Warren County, Federal Project No. I-FI-195(3). Length 3.948 miles. The principal items of construction are:

Estimated: 37,000 cu. yds. Roadway Excavation-Earth
2,000 cu. yds. Roadway Excavation-Rock
10,000 cu. yds. Borrow Excavation
56,400 cu. yds. Subbase
92,700 sq. yds. Gravel Base
52,750 sq. yds. Macadam Base
7,200 tons Bituminous Concrete Surface
112,940 sq. yds. Rein. Conc. Pavement
2,944 lin. ft. Rein. Conc. Pipe
31,800 lin. ft. White Conc. Curb

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Wednesday, May 6, 1953, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the N. J. State Employment Service, Municipal Building, South Main Street, Phillipsburg, New Jersey. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $0.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: May 6, 1953

Route 56 (1927—Route U. S. 30 (1953), Sec. 2B

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Route 56 (1927)—Route U.S. 30 (1953), Section 2B, Intersection Improvements at Illinois Avenue, New York Avenue, and Brigantine Boulevard, Atlantic City, Atlantic County. The principal items of construction are:

Estimated: 312 cu. yds. Roadway Excavation-Earth
595 cu. yds. Borrow Excavation
624 sq. yds. Macadam Base
107 tons Bituminous Concrete
2,162 lin. ft. White Concrete Curb

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Wednesday, May 6, 1953, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: May 18, 1953

Painting a Portion of the Delaware River Bridge—Contract No. 30-E

DELAWARE RIVER PORT AUTHORITY
CAMDEN, NEW JERSEY

Sealed bids will be received for the Painting of grid beams and related steel under Lanes 1 and 8 of the present bridge, to be identified as Contract No. 30-E at the office of the Secretary of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 1:30 P. M. Daylight Saving Time, Monday, May 18, 1953 and then and there will be publicly opened and read.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified or cashier's check in the sum of $5,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office either in Philadelphia, Pennsylvania or Camden, New Jersey and the Surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the work to be done.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids; and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
Joseph K. Costello, Secretary

Bids: May 12, 1953.

Construction of Two-Lane Vehicular Tunnel

WEST VIRGINIA TURNPIKE
COMMISSION

ADVERTISEMENT FOR PROPOSALS

Sealed Proposals will be received by the West Virginia Turnpike Commission for:
CONTRACT NO. 17

The work to be done under this Contract consists of furnishing all labor and material required for the electrical installation for a two-lane vehicular tunnel, approximately one-half mile long, two ventilation buildings, a service building and areas adjacent to the buildings, which are to be constructed under other contracts in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

The southerly tunnel portal, the southerly ventilation building and the service building are located in the vicinity of Four Mile Fork about one-half mile west of the town of Standard and the northerly tunnel portal and the northerly ventilation building are located at approximately Mile 68.3 in the vicinity of Giles Creek about one and one-half miles east of the town of Fairfield in Kanawha County, West Virginia.

Proposals will be received at the office of the West Virginia Turnpike Commission, 1240 Wilson Street, Charleston 5, West Virginia until 9:00 A. M. Eastern Standard Time, and thereafter at the House of Delegates Chamber, State Capitol, Charleston, West Virginia until 10:00 A. M. Eastern Standard Time, on May 12, 1953, at which time and place said proposals will be publicly opened and read.

WEST VIRGINIA TURNPIKE
COMMISSION
D. H. Morton, Chairman

April 10, 1953

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

PRODUCTION MANAGER:—Steel Fabricator of structural, reinforcing and miscellaneous iron for the construction industry. At present processing 3000 tons per month. Need energetic man with rich experience background. Splendid opportunity for future development. Position now open due to retirement and unexpected serious illness. Age range 35 to 45 years. Location southwest. P-7396, Engineering News-Record.

SALES EXECUTIVE—Manufacturer of steel joists, deck and culvert pipe; steel fabricator of structural, reinforcing and miscellaneous iron; warehousing of related steel specialties. Operation 9 southwestern states; present volume 3000 tons monthly. Position requires promotion of products to architects and engineers, and selling to contractors and owners. Prefer man 35 to 45 years. Excellent opportunity for experienced producer. P-7357, Engineering News-Record.

COMPUTOR, DRAFTSMAN and general office man, experience in Subdivision and property surveys for an 88 year old firm. Joyce Company, 802 Chestnut St., St. Louis, Mo.

ESTIMATOR OR Engineer—Must be experienced in heavy construction, for general contractors' office in metropolitan New York area. Furnish complete data regarding qualifications and experience. P-7553, Engineering News-Record.

WANTED—ENGINEERS experienced in water works, sewers, paving, buildings, for design and supervision of construction. Advise education, experience, salary requirements, and when availaable. P-7314, Engineering News-Record.

CONSTRUCTION SUPT.—Thoroughly experienced in pile driving and bridge construction. Only exceptionally qualified men need apply. Give age, detailed record, references and salary. Middle east location. P-7636, Engineering News-Record.

QUANTITY SURVEY Engineer for Plumbing Contractors office, experienced man capable of assuming responsibility for both estimating and supervising installation of plumbing and associated work on all types of projects. This is an exceptional opportunity for the right man with an old established Plumbing concern in Connecticut. When replying, state experience, references, education, marital status and salary details. P-7603, Engineering News-Record.

ASSISTANT CITY Engineer for City in Central Wisconsin. Graduate civil engineer with some experience in Municipal work desirable. In first letter state age, experience, salary desired, etc. P-7646, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

SALESMAN WANTED—Steel specialties promotion and selling doors, windows, joists, deck and related items for commercial and residential construction. Qualifications desired: Graduate in architecture or engineering; age 28 to 35 years; good mixer and energetic. SW-7398, Engineering News-Record.

EMPLOYMENT SERVICE

WANTED-ENGINEERS. Designers, Draftsmen-Structural, Piping, M.E., C.E., E.E. and Industrial, also Teachers and Chemists. Cleveland Engineering Agency, 2132 E. 9, Cleveland.

POSITIONS WANTED

CONSTRUCTION SUPERINTENDENT and Engineer desires work in New England. Experienced industrial plants, housing, heavy construction, bridge and marine work, skilled estimator. PW-7361, Engineering News-Record.

EARTHWORK SUPERINTENDENT — Railroad embankments, dams, airports, highways, asphalt, soil cement, all types of excavation and earthworks construction. Planning, scheduling, organization of efficient operation. A driving superintendent to make men and machinery go. Completely familiar with Latin American construction. Fluent Spanish. Desire Latin American assignment. Excellent record and references. PW-7462, Engineering News-Record.

CIVIL ENGINEER, graduate, age 27, married, one child. 2½ years varied experience, now in Connecticut, will relocate in New England or middle Atlantic States for suitable position with heavy construction firm or consulting engineers. PW-7543, Engineering News-Record.

CIVIL ENGINEER graduate, 29, experienced 5 years Material and Soil, Heavy Construction. Desires permanent position. Minimum salary $5500. PW-7539, Engineering News-Record.

CIVIL ENGINEER—Extensive background in aerial and still photography. Experience in construction. Age 24, married, recently discharged from US Air Force where duties were Photographic and Public Relations Officer on Wing level. Am willing to travel—Available late May. Desire photographic work or related sales with engineering company. PW-7592, Engineering News-Record.

(Continued on page 112)

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** EQUIPMENT: USED OR RESALE

UNDISPLAYED RATE

$1.50 a Line, minimum 3 lines. To figure advance payment count 5 average words as a line.
Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.
POSITION WANTED and Individual Selling Opportunity Wanted undisplayed rate is one half of above rate, payable in advance.
Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.
Replies are forwarded each day as received at each of the offices mentioned without additional charge.
NEW ADVERTISEMENTS: Address N. Y. office, 330 W. 42nd St., N. Y. 36, N. Y., for May 7th issue, closing April 27th.
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED RATE

The advertising rate $17.10 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.
An advertising inch is measured ⅞ inch vertically on one col. 3 col.—10 inches to a page. E.N.R.

WANTED
GENERAL SUPERINTENDENT

Qualified to take charge of field operations in industrial building department with General Contractor operating in the Southeastern States. Annual volume of business in excess of 25 million. Applicant must be a graduate engineer with good personality, able to conduct business with clients and have successful record as superintendent on heavy industrial construction and installation of equipment, with experience on Pulp and Paper Mills, Cement and Fertilizer Plants. Excellent salary.

P-7631, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

SANITARY ENGINEER

Chief Sanitary Engineer to assume complete charge of department handling water supply, treatment and distribution and sewage collection and treatment projects for a down-state Illinois, well established, financially stable firm of Consulting Engineers. Must have ten years' experience and be licensed Structural Engineer in Illinois or able to be so licensed quickly. Salary and bonus to attract qualified engineer. Send full details on experience and training in first letter. Photo optional. Replies will be treated confidentially. Principal will interview applicants anywhere. Write

P-7632, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED

An Alert Mechanical Engineer with Some Knowledge of Electrical Engineering . . . Must Be a Good Calculator . . .

PHILIPS & DAVIES, INC.
KENTON, OHIO

STRUCTURAL ENGINEER

With 10 to 15 Years Experience in Reinforced Concrete and Structural Steel Design for Electric Utility Work, *Write* to Structural Engineer

PENNSYLVANIA POWER & LIGHT CO.
Allentown, Pa.

SALES ENGINEER

Old reliable engineering and construction company located in Pittsburgh, Pennsylvania, needs sales engineer. Permanent employment, best working conditions, excellent advancement opportunities. Give complete details in first letter such as age, education, experience and salary expected.

P-7643, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS and DESIGNERS

With experience applicable to Oil Refinery, Blast Furnace or Steel Plant Design.

Permanent positions
Overtime—45 hour week
No age limitations

Openings available at our Cleveland, Ohio, office for:

Piping Designers
Structural Designers
Concrete Vessel Designers
Pressure Vessel Designers
Instrument Specifications Engineers
Equipment Specifications Engineers

These openings offer:

Top hourly rates
Annual Profit-Sharing Bonus

Write, giving complete background and experience to:

ARTHUR G. McKEE & CO.

2300 Chester Ave. Cleveland 1, Ohio

ENGINEERS

Structural, mechanical, and electrical for work on hydro-electric power developments. Write giving full experience record and qualifications.

HARZA ENGINEERING COMPANY
400 West Madison Street Chicago, Illinois

ESTIMATOR

Wanted by Phila. firm for large sewers, bridges, treatment plants. Must have had experience with contractors in similar work. State salary, experience and when available.

P-7430, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED
LAND SURVEYOR

with New York or Connecticut license for land surveyor's office in southern Connecticut. Opportunity.

P-7545, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

SUPERINTENDENTS

with substantial experience in

CONCRETE PIPE PRODUCTION

Nationally known producer of concrete pipe offers several exceptional permanent positions to experienced field men capable of supervising manufacture of concrete pressure and non pressure pipe throughout the United States. Also several openings for top-notch master mechanics preferably with previous experience on pipe machinery.

This reputable, well established Company is prepared to offer to the right men life-long secure positions, unparalleled opportunities for growth, personal recognition for individual accomplishments, generous company benefits in addition to high starting wages.

Only men eager and able to get results need apply.

P-7597, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

COST SUPERVISOR

Supervisor of cost accounting for large addition to public utility generating station. Must have experience in the accounting requirements of the Federal Power Commission and Pennsylvania Public Utility Commission. Will be responsible for the supervision of the field accounting staff and the preparation of regular and special cost reports. Work location, Pittsburgh, Pa. vicinity. All applications acknowledged and kept confidential. Please write giving full details of age, education, experience and salary requirements to

P-7550, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Cessna

ENGINEERS

WANTED

recent graduates from engineering colleges needed in structures section for testing and stress analysis assignments

SEND RESUME TO

CESSNA AIRCRAFT CO.

ATT'N. PERSONNEL
WICHITA, KANSAS

ESTIMATORS

Young engineers capable of mechanical estimating for construction of refineries, steam power and similar industrial projects. Must have some field experience. Considerable weight given to ambition, intelligence and interest in estimating and cost analysis.

BECHTEL CORPORATION
220 Bush Street
San Francisco, California

STRUCTURAL ENGINEERING

ARCHITECTURAL ENGINEERING

OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. *Forty-third year. Write today.*

WILSON *Engineering Corp.*

College House Offices - HARVARD SQUARE, CAMBRIDGE, MASS.

SUPERINTENDENTS AND PROJECT MANAGERS TRAINING COURSE

All instructions by mail. Send today for sample lesson and complete details

Geo. E. Deatherage & Son, Dept. 101
411 S. 5th Ave. Lake Worth, Florida

POSITIONS WANTED
(Continued from page 111)

CIVIL ENGINEER desires change, age 42, graduate, registered, 20 years varied public works experience; administration, construction, estimating, design. Emphasis on sewers. Excellent references. PW-7541, Engineering News-Record.

GENERAL CONSTRUCTION Superintendent and civil engineer, 30 years worldwide and tropical experience, field and office, heavy, desires responsible position. Familiar with languages. Would relocate anywhere, incl. tropical America. PW-7594, Engineering News-Record.

ESTIMATOR HEAVY Construction, experienced designer of power plants, chemical plants and Petroleum refineries. Can be available on one month's notice. PW-7559, Engineering News-Record.

SUPT. JOB Wanted. Will travel anywhere. Experienced Tunnels, subways, Sewers, Roads. 30 years experience in blasting of all types. A.B. Izzo, 827 Morris Park Ave., Bronx 60, N. Y. Phone TAlmadge 2-7000.

CH. CONST. Eng., Registered, 20 yrs. exp. heavy construction. Estimating, planning, buying and supervision. PW-7198, Engineering News-Record.

SELLING OPPORTUNITY WANTED

SALES ENGINEER. Desires to represent manufacturer of equipment used in the treatment of industrial water or waste. RA-7608, Engineering News-Record.

BUSINESS OPPORTUNITIES

Wanted Partner with ample financial resources for general contracting business in Florida. Active or Inactive. Have everything necessary but ample capital. Stand rigid investigation. Inquiries invited. BO-7533, Engineering News-Record.

Wanted Man with capital to finance experienced man in paving business on partnership basis. My interest to be repaid. BO-7606, Engineering News-Record.

FOR SALE

For Sale. Gurley 6" needle compass, Declination arc, standard slit sights, extra pair, slit and hair, plain telescopic sight attachment with stadia wires, fits either pair of sights, early new extension tripod. An unusually complete compass in good condition and fine appearance. Accessories. Price $100. James L. Davis, Fairlee, Vt.

BANKRUPTCY AUCTION SALE

U. S. District Court, E. D. of N. Y.

Sell Wednesday May 6th at 11 A.M.
97-11 98th Str., Ozone Park, N. Y.

Bucyrus-Erie ¾ yd. Gas. Comb. Crane & Shovel Crawler #1030
Bucyrus Caterpillar Steam Pile Driving Crane #30B
Osgood Caterpillar Steam Pile Driving Crane #29
All 3 with 45' Booms. 2 #1 & #2 Vulcan, and McKiernan-Terry #9B2
Steam Pile Hammers, 2 Sets Steel Pile Driving Leads 54' long
Lincoln Welder, Comb. Electric Chain Saw & Cable, etc.
Inspection on Tuesday, May 5th, from 9 A.M. to 4 P.M.

CHARLES MEYER, *Auctioneer*
William H. Brown, Trustee, 261 Broadway, New York
Re: Aqueduct Pile Driving Co.: Bankrupt.

WANTED

2½ Yd. Owens rehandling bucket.

FOR SALE

2 Prs. of used D7 tracks, approx. 50%, $250.00 a pair.
1—5 x 12 single deck Seco screen, like new.

A. & J. Buyers, Inc.
3580 Sheridan Drive, Buffalo 21, New York

FOR SALE

1 Cu. Yd. Butler Concrete BATCHING PLANT

Complete with 85 Cu. Yd. 4 comp. aggregate bin, 675 bbl. cement bin, screw conveyor, truck dump hopper, and elevator. 1 undertrack cement unloader with elevator. Both 220/440/3 PH 60 Cy. with line starters. Both new 1952, used one job, first class condition, now available, priced for quick sale.

C. R. MEYER AND SONS COMPANY
Att. Wm. Cowling, 50 State St.
Oshkosh, Wis. Tel. Stanley 3717

GRADING EQUIPMENT

1 DS Cat. Angledozer, 21' Series 200 hrs. complete overhaul
2 DS Cat. Tractors, 8R Series
2 LeTourneau Model "F" Scrapers
2 Dual Drum Sheepsfoot Rollers used one job only

Valued at more than twice the asking price.

Package Price $19,000.00 Net
F.O.B. our yard, Pittsburgh, Pa.

We reserve the right to withdraw any or all of above at anytime.

SANCTIS CONSTRUCTION, INC.
410 Marlow St. Pittsburgh 20, Pa.
Phone: WAlnut 1-9000

500 Cu. Ft. COMPRESSORS

Gardner-Denver 500 cu. ft., portable air compressors, powered by Caterpillar Diesel D13000 engines and mounted on four pneumatic tires. Two available. These compressors were new in the fall of 1950 and have had a little over 4500 easy hours. Thoroughly reconditioned and like new in appearance and performance. Replacement cost $12,945.00.

Serial No. 146622, price, f.o.b. Louisville $6,250.00
Serial No. 147343, price, f.o.b. Ashland $7,250.00

R. D. EZELL
800 W. Main Louisville, Ky.
Wabash 6803

ROAD FORMS FOR SALE

6000' NEW BlawKnox 10x10
3000' BlawKnox 9x8
8000' BlawKnox 8x8
2000' Heltzel 9x9
7500' Heltzel 9x8
2600' Heltzel 8x8

AL J. GOODMAN
P. O. Box 263, Ashville, N. Carolina
Phones: 36456 7 (Day) 5668 (Nite)

1 Yd. SHOVEL ATTACHMENT *Complete* For Model 600 P & H

LOUIS ARGENIO, INC.
381 Broadway Newburgh, N. Y.
Phone Newburgh 5102

WANTED

20 or 25 Ton Truck Crane
30 Ton Diesel Locomotive Crane
45 Ton Diesel Electric Locomotive

B. M. WEISS COMPANY
Girard Trust Company Bldg. Philadelphia 2, Pa.

FOR SALE

1—Lorain Mdl. L50J Lifting Crane with 60′ boom, pendant suspension, 15′ jib with Caterpillar D-318 diesel engine. Machine 2 years old. Very good condition. RSP-194 (B)

SALE PRICE F.O.B. PADUCAH, KY. $14,000.00

1—Lorain Mdl. #77 Shovel w/2 cu. yd. Amsco Bucket. Caterpillar diesel engine. $3800.00 in repairs since use. S-2184 (B)

SALE PRICE F.O.B. LOUISVILLE, KY. $13,900.00

1—Allis Chalmers Mdl. HD-19 Crawler Tractor w/GM diesel engine and cable angle blade and Garwood double drum power control unit. Running condition. S-2223 (C)

SALE PRICE F.O.B. LOUISVILLE, KY. $7,500.00

1—International Mdl. TD-24 Crawler Tractor w/Bucyrus-Erie P-28 double drum power control unit. RS-2235 (C)

SALE PRICE F.O.B. LOUISVILLE, KY. $8,500.00

SYMBOLS

A—Almost new or rebuilt & guaranteed
B—Reconditioned—good running order
C—Fair "As Is"

LOUISVILLE MIDDLESBORO BRANDEIS EVANSVILLE PADUCAH

BRANDEIS MACHINERY & SUPPLY COMPANY

INCORPORATED

LOUISVILLE Since 1908 KENTUCKY

FOR SALE

EXCELLENT PHYSICAL & OPERATING CONDITION

23 Austin-Western Automatic Air-Operated Dump Cars 20 Cubic Yards Capacity, AB Air Brakes, Lift Door Std. Gauge.

13 Austin-Western Automatic Air-Operated Dump Cars 20 Cubic Yards Capacity, AB Air Brakes, Lift Door with unloading aprons, Std. Gauge.

2 Jordan Standard Spreader Cars, 50 ton Capacity, AB Air Brakes, Enclosed Operator's Cab, Std. Gauge.

MARSHALL RAILWAY EQUIPMENT CORP.

50 Church St. N. Y. 7, N. Y.
Cortlandt 7-8090

FURNIVAL'S TRADING POST

A TWICE MONTHLY LISTING OF DESIRABLE USED EQUIPMENT

REX MIXER — model 7S, with power loader and water tank, LeRoi gas engine. Mounted on two pneumatic tired wheels. A dependable piece of equipment at a very good price. **$550**

LE TOURNEAU SUPER "C" DOZER — complete with Buda engine and double scraper hook-up. This piece of equipment just came into our yard. It's in excellent condition. You'll find it a very good buy **$14,000**

INGERSOLL RAND PORTABLE COMPRESSOR — model IKA-500 with 500 cu. ft./min. capacity, mounted on four pneumatic tired wheels. Has had good performance record. Traded in on larger model. **$3,000**

INGERSOLL RAND PORTABLE COMPRESSOR — same model as above, but is almost new. Demonstrator. Powered by an International Harvester engine. Top value at **$9,257**

MIXERMOBILE — model 200 with 35′ tower and 10′ extension. In excellent condition. Price upon request.

PARSONS TRENCHER—model 200 with 12" bucket, 16" cut, serial #1723. In good condition, just off a big job. The contractor has no further use for it, so you save. Priced to insure your profit, now and in the future **$4,000**

INTERNATIONAL TRACTOR — model TD-18 with steel tracks. Powered by an International diesel engine. Complete with BE dozer blade. In very good condition **$9,000**

LE TOURNEAU SUPER "C" TOURNAPULL WITH LP SCRAPER. In good condition and at a good price. **$4,500**

LORAIN ½ YD. TRUCK CRANE — powered by Hercules six cylinder gas engine. Has 25′ boom; is mounted on ten wheel Thew moto-crane carrier powered by Waukesha gas engine with good 11:00 x20 — 12 ply tires, live boom. You're in business with this one **$13,000**

LA PLANT CHOATE SCRAPER — capacity 14 yd. struck, 17 yd. heaped. Powered by Buda engine. In excellent condition. We'll give you a good price.

SUBJECT TO PRIOR SALE. WRITE, WIRE, CALL AT ONCE

FURNIVAL MACHINERY CO.

54th and Lancaster Ave., Phila. 31, Pa. · TR 7-5200

BEARING PILES

FOR SALE

100 Tons 8" BP 36#
100 Tons 10" BP 42#
100 Tons 12" BP 53#
100 Tons 8" H 31#
100 Tons 10" H 49#
100 Tons 12" H 65#

CAN FURNISH 6" TO 12" H BEAMS OR BEARING PILES, ANY DESIRED WEIGHT 4/6 WEEKS SHIPMENT FROM MILL

WRITE, WIRE, PHONE

QUEENSBORO STEEL CORP.

BOX 1376 WILMINGTON, N. C.

FOR SALE

3" Diameter Locked Coil Track Cable

Length of 1,000 ft. and strength not less than 500 short tons. Manufactured by the U. S. Steel Export Corporation for the construction of Yauco Dam of the Southwestern Puerto Rico Project, where it was used only in the placement of 100,000 cubic yards of concrete. The cable, in excellent conditions, is at present stretched over the top of the Yauco Dam where it is readily accessible for inspection.

For further information, contact may be made with the Purchasing Officer, Puerto Rico Water Resources Authority Box 4267, San Juan, Puerto Rico

Establishing a new HIGH in rebuilt machinery . . .
Our 3 decades of diversified experience in rebuilding heavy construction equipment, quarry equipment and trucks, can be of invaluable help to you in rebuilding your equipment.
L. B. Smith's proved ability to do the job right . . . the way you want it done . . . can provide important savings in time and money.
If you are undecided what to do about a piece of used equipment, pay us a visit . . . see what we are doing for other customers . . . and to our own equipment. We cordially invite you.
L.B.SMITH INC.
L. B. SMITH INC.
CAMP HILL, SUBURB OF HARRISBURG, PA.

L. B. SMITH INC.

New and Used Equipment News

Prepared Monthly by Ed Woolford at Camp Hill, Pa.

VOL. 1 NO. 12

AIR COMPRESSORS

Gardner-Denver 500 cu. ft. diesel, new condition.
Gardner-Denver 500 cu. ft. diesel, good operating condition.
Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.
Paving breakers, jackhammers, wagon drills, tie tampers.

QUARRY EQUIPMENT & BINS

2036 Cedarapids AAA primary unit on rubber, diesel power. Rebuilt.
1036/2418 Cedarapids Jr. Tandem unit on rubber.
Cedarapids Rock-It plant w/2025 jaw, 3033 hammermill. New.
1236 Cedarapids Model 6C plant. New.
4033 Cedarapids Model 6C plant. New.
2020 Cedarapids double impeller. New condition.
4024 Cedarapids roll. Rebuilt.
3018 Cedarapids roll. Rebuilt.
1236 Cedarapids twin jaw crusher. New.
1036 Cedarapids jaw. Rebuilt.
10x7 Allis Chalmers lake type jaw crusher. Rebuilt.
B-3 Jeffrey swing hammer pulverizer. Rebuilt.
60" dia. x 14' long Traylor revolving screen. Rebuilt.
36" Wemco single pitch sand screw. New condition.
15 cu. yd. Cedarapids sand drag. New.
16" x 90' bucket elevator.
60-ton, 2-compartment, 8' x 18' storage bin w/clam gates.
100-ton, 2 compartment, 13'x23' storage bin.
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also belt.
24" Dia. x 36" face magnetic pulley.

TRUCKS—TRAILERS

27FD Euclid rear dumps.
1½-ton Ford with any body.
2000-gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.

GENERATORS & LIGHT PLANTS

1½ KW to 125 KW, alternating and direct current gasoline and diesel powered.

SHOVELS—CRANES

Lorain L-82, 2-yd. diesel.
Lorain 77, 1½-yd. diesel.
Lorain 75B, 1¼-yd. diesel.
Lorain L-50-I, 1-yd. diesel.
Lorain 40 truck crane on Mack 3-axle truck.
Link Belt LS85 diesel combination.
Unit 514, ½-yd. gasoline crawler shovel, rebuilt.
Lorain 30A, ½-yd. gas combination.

SHOVEL & CRANE ATTACHMENTS

Lorain L-41 Chain Crowd Shovel Attachment. Rebuilt.
Lorain 40 Hi-Lift shovel attachment.
P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Bucyrus-Erie 1½-yd. rock bucket.
McCaffrey Model 648 for 1¼ to 2-yd. crane.
McCaffrey Model 636 for ¾-yd. to 1-yd. crane.
Lorain 77 crane boom, 45'.

BACKHOE BUCKETS & ATTACHMENTS

Lorain 30 hoe attachment complete.
¾-yd. Lorain, 40, LBS #6105, 44" cutting width.
¾-yd. Amsco 40" cutting width, LBS #8101.

CLAM—DRAG—SCRAPER BUCKETS

LIFTING MAGNETS

1—45" Ohio lifting magnet, rebuilt.

SHOVEL DIPPERS

Lorain 41, ¾-yd. LBS #8600, rebuilt.
New Lima 1-yd. Amsco, LBS #2295.
Bucyrus-Erie 1¼-yd. gas air, LBS #3782, new.
Lorain 75B, 1½-yd. manganese bucket, LBS #8538.
Lorain 75B, 1¼-yd. extended lip, 1¾-yd. LBS #2260.
Pettibone-Mulliken 2-yd. Lorain 82 or 820, manganese, LBS #5361.
Pettibone-Mulliken 2-yd. for 3500 Manitowoc LBS #5763.
Esco 2½-yd. cast weld dipper with bail & teeth.

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Blaw-Knox gas-electric finisher, 10½'-12½', rebuilt.
Koehring 10'-12' finishers, rebuilt.
Cleveland formgrader, new 1944 rebuilt.
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3-yd. Challenge high discharge mixer on International chassis.

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TD-24 International with Bucyrus-Erie angle-blade.
TD9 International diesel with 1 yd. Loadover.
Model CR Tournapull w/18-yd. Model E18 Tournarocker, rebuilt.

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Sanderson-Cyclone #42 well drill, new.
Sanderson-Cyclone #44 well drill, new.
Bits—Stems—Bailers—Sockets—Etc.

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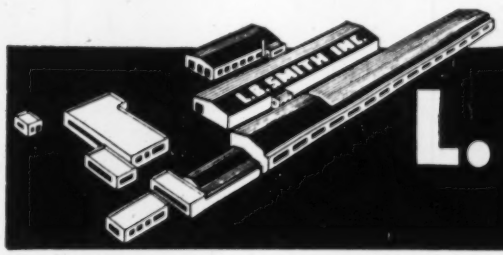

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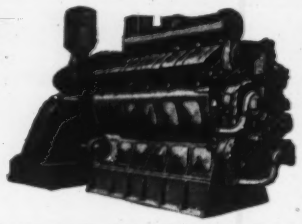

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KW	Make	Model	HP	RPM	KW	Make	Model	HP	RPM
1980	Nordberg	TS–217	2800	225	320	Enterprise	DSG–6	560	450
1500	Fairbanks Morse	33E16	2000	300	300	General Motors	8–268A	450	1200
1136	Fairbanks Morse	38D	1600	720	250	Fairbanks Morse	37–E	375	360
1100	General Motors	16–278A	1600	720	200	General Motors	8–268A	350	900
750	General Motors	12–567	1080	720	150	Worthington	CC–4	225	450
500	Baldwin	VO–8	750	514	150	Buckeye	80	240	600
500	General Motors	8–278A	750	720	100	Worthington	BB–5	150	600
500	General Motors	8–567	720	720	100	General Motors	3–268A	150	1200
400	Ingersoll-Rand	8–8	600	720	60	General Motors	6–71	90	1200
350	Baldwin	VO–6	510	450	30	Internat'l Harvester	UD–14	45	1200

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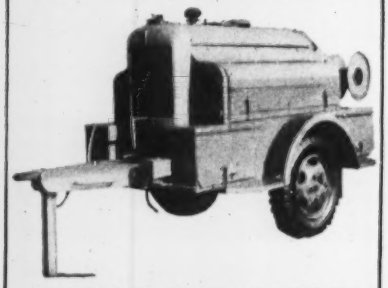

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Locomotive Cranes	Dredges, Hydraulic
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75 H.P. Hercules Engine

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Bulldozers—5 to 20 Tons
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3—1035 c.f.m. Ingersoll-Rand Stationary Compressors with 200 H.P. Electric Motors, Air Receivers, Aftercoolers and made-up piping.
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3—Whitcomb, 10 ton, Electric Locomotives
3—40 K.W. Battery Charging Units
2—20 K.W. Battery Charging Units
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8—5 yard Side Dump Muck Cars
6—2 yard Koppel Dump Cars
30—Flat Cars

For Ventilation
2—7300 c.f.m. Roots-Connersville Blowers
1—Joy Axivane Fan, series 1000
12,000'—24" Vent Pipe, Lock Joint, 14 gauge

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2—¾ yard Hackley Pneumatic Concrete Placers
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Special Placing Equipment for Arch and Invert

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FS-7630, Engineering News-Record
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FS-7115, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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FS-7615, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

New 2-cu yd tractor shovel launched

Crawler-mounted shovel is designed for rugged work with less operator fatigue

At first glance it looks like a D6 Cat modified with hoists, booms and buckets for heavy duty loader work—but certain fundamental design changes make the No. 6 shovel a new item. Track roller frames are longer than on the D6, and one track roller has been added to each side for increased traction and lateral stability. In addition, the seat is nine inches higher and six inches further forward than on the D6 to provide better visibility, especially to the side. The surge tank and hydraulic control valves are housed in one unit at the rear, thus keeping the flexible hydraulic hose out of the operator's way and permitting better cooling.

• **Greater operator comfort**—The comfort of the operator is further borne in mind in the design of the controls. The control levers for the bucket and lift arms are located so both may be operated with one hand, and once the hydraulic lift arm control lever is engaged, it remains in position without holding. At maximum lift an automatic kickout disengages the lever.

• **Big 2-cu. yd. bucket**—Bucket capacities of the tractor-shovel are 1.5 cu. yd. struck and 2 cu. yd. heaped. It is made of layer plate for additional ruggedness and has a hard-faced cutting edge. The bucket may be lowered to 14 in. below the ground line for digging and can be raised 10 ft. 9 in. at the hinge for dumping. At full elevation and in the 45-deg. dump position there is 8 ft. 7½ in. clearance under the 8-ft. wide bucket lip. The shovel has a 3-ft-5-in. dumping reach.

Lifting and dumping is accomplished by side-mounted double-acting hydraulic rams. Sticky materials are shaken out of the bucket by a bell crank striking the stop on each side of the lift arms.

• **Hydraulic system**—Hydraulic pressure to actuate the lift arms and bucket dump is supplied by a front-mounted vane-type pump that is rated at 56 gpm at 1400 rpm at 1000 psi.

• **66-hp power plant**—The shovel's engine is a six-cylinder water-cooled Caterpillar diesel rated at 66-drawbar-horsepower. This is sufficient to drive the shovel five speeds forward from 1.4 mph to 5.8 mph and four speeds reverse from 1.8 to 5.4 mph. Maximum drawbar pull is 18,700 lbs.

• **New track shoe design**—The 18-in. flat center shoes are said to combine the characteristics of flotation, traction and resistance to sideslip. The raised centers of the shoes serve as street plates and cut out centers have been designed to give better cleaning action. Detachable grousers are available if desired. The crawler is equipped with large front idlers that, according to the manufacturer, afford greater stability and permit more accurate control of the machine.

• **Rugged construction**—Besides the bucket assembly, other features of ruggedness have been built into the machine. Lift arms are of welded box construction and the bucket control arms are made of solid steel. Bucket stability is insured by a box-type cross brace between the lift arms. The shovel has a heavy duty bumper guard in addition to the customary radiator guard.

The machine measures 17 ft. long, 8 ft. wide and 7 ft. high and weighs in at a little over 14 tons. CATERPILLAR TRACTOR CO., PEORIA, ILL.

Waterproof drawing ink for use on plastics

A new waterproof drawing ink, called Acetate Ink, has been developed for use on plastics, including vuepak, lucite, lumarith, kodapak, etc. According to the manufacturer, it can be applied by brush or pen and flows freely, drying in normal drying time and, in addition, is resistant to alkali, acids and oils.

The ink is available in a permanent and removable type in seven colors as well as opaque and transparent quality. ARTONE COLOR CORP., 21 W. THIRD ST., NEW YORK 12, N. Y.

Fiberglas liner cuts down air duct noises

A flexible duct liner of Fiberglas can be used to reduce sounds that normally travel through air ducts. Further, the liner has thermal insulating properties that, the manufacturer states, allow the metal surface of the duct to act as a vapor barrier, thus preventing condensation on those ducts carrying cool air through areas of high humidity.

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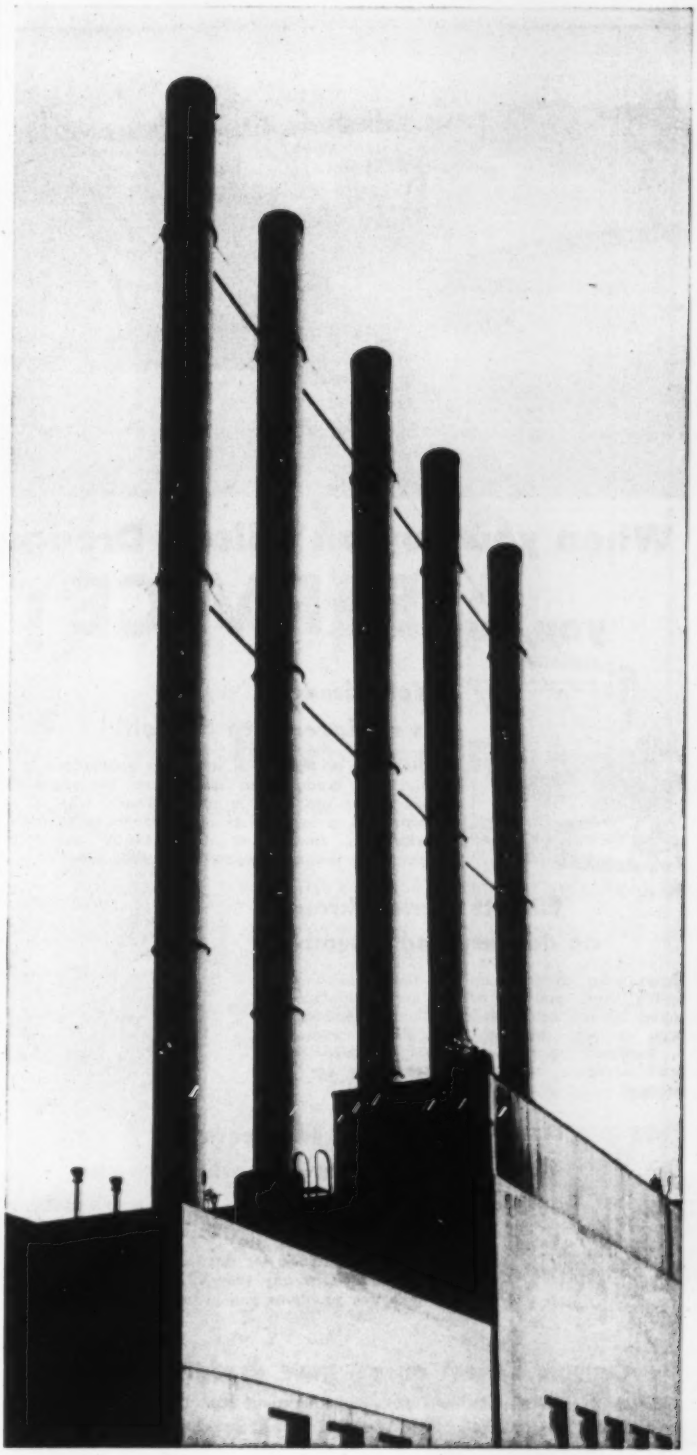

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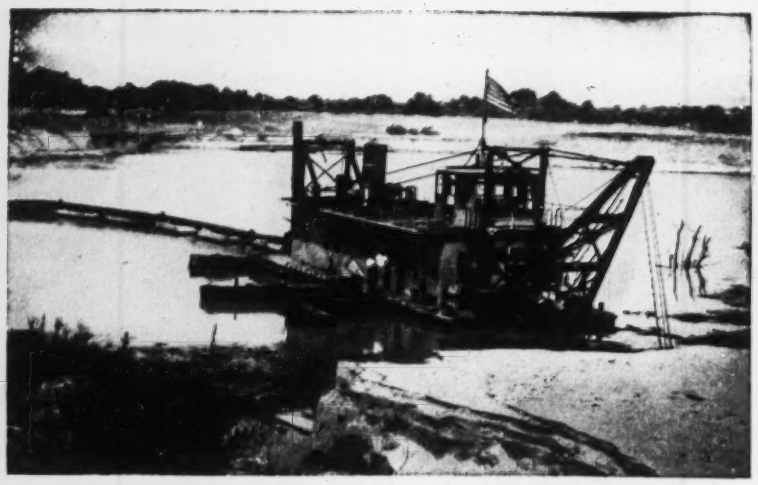

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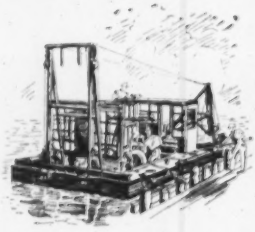

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65-lb arc welder handles 5/32-in. electrode

Occupying less than ¼ cu. ft. of space and weighing 65 lbs, the Royal-Arc welder can be stowed on the job easily for emergency and maintenance use.

The machine has a heat range of 15 to 200-plus amps and is said to use any 110/220 ac line as a power source. Electrodes used are from $\frac{5}{64}$ in. to and including $\frac{5}{32}$ in.

The manufacturer says that the welder may be used to weld, braze, solder, cut or preheat using either the metallic arc or carbon arc process. Royal Equipment Corp., 906 Main St., Burbank, Calif.

Cable control unit sports simplified power train

Especially designed for use with tractors of 130 hp or more, a new heavy duty cable control unit employs a simplified power train comprised of only one worm gear and wheel.

Double drums of 10-in barrel diameter are actuated by multiple disc clutches and stopped by large-surface self-energizing brakes. Each drum has a cable capacity of ½ in x 235 ft or $\frac{7}{16}$ in x 186 ft. Line speed at 1000 rpm input is rated at 343 fpm with bare drum and at 542 fpm with full drum.

Designated as the Wooldridge Model WD-2, the unit is designed for use with Caterpillar D-8, Allis-Chalmers HD-20 and HD-19, and International Harvester TD-24. According to the manufacturer, it may also be adapted to certain other large tractors. Wooldridge Manufacturing Co., Sunnyvale, Calif.

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Available raw materials . . . Dependable manpower . . . Soil conditions . . . Waste disposal . . . Reasonable tax structures . . . Availability of water . . . Proper drainage . . . Suitable climate . . . Power . . . Sensible real estate values . . . Room to expand . . . Clean, progressive communities . . . Nearness to domestic markets . . . Access to world markets . . . Transportation.

Complete planning is essential before the first move is made. Why not arrange a meeting with our plant site location specialists before you decide to buy? This work is all part of Ferguson's engineering and building service to industry.

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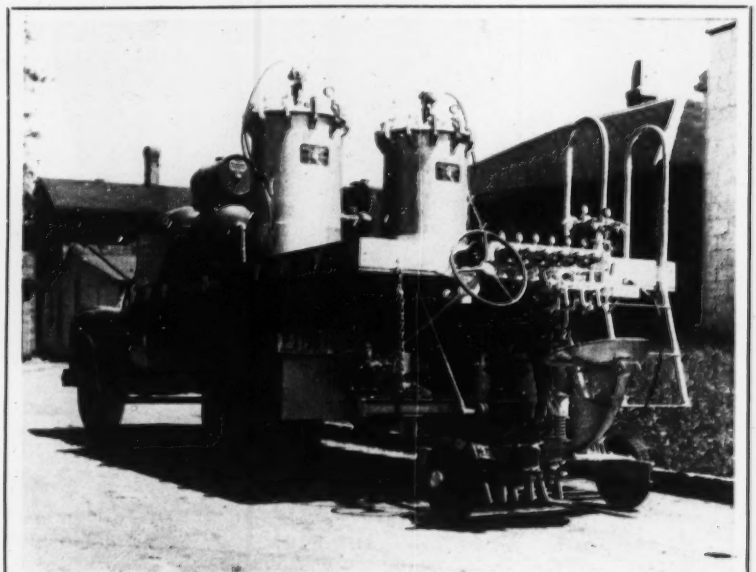
Seeder makes lawn in one pass

Landscapers and contractors can put large contract lawn seeding on a highly profitable basis with a new five-foot tractor-mounted lawn seeder which has been introduced by the Brillion Iron Works, Inc.

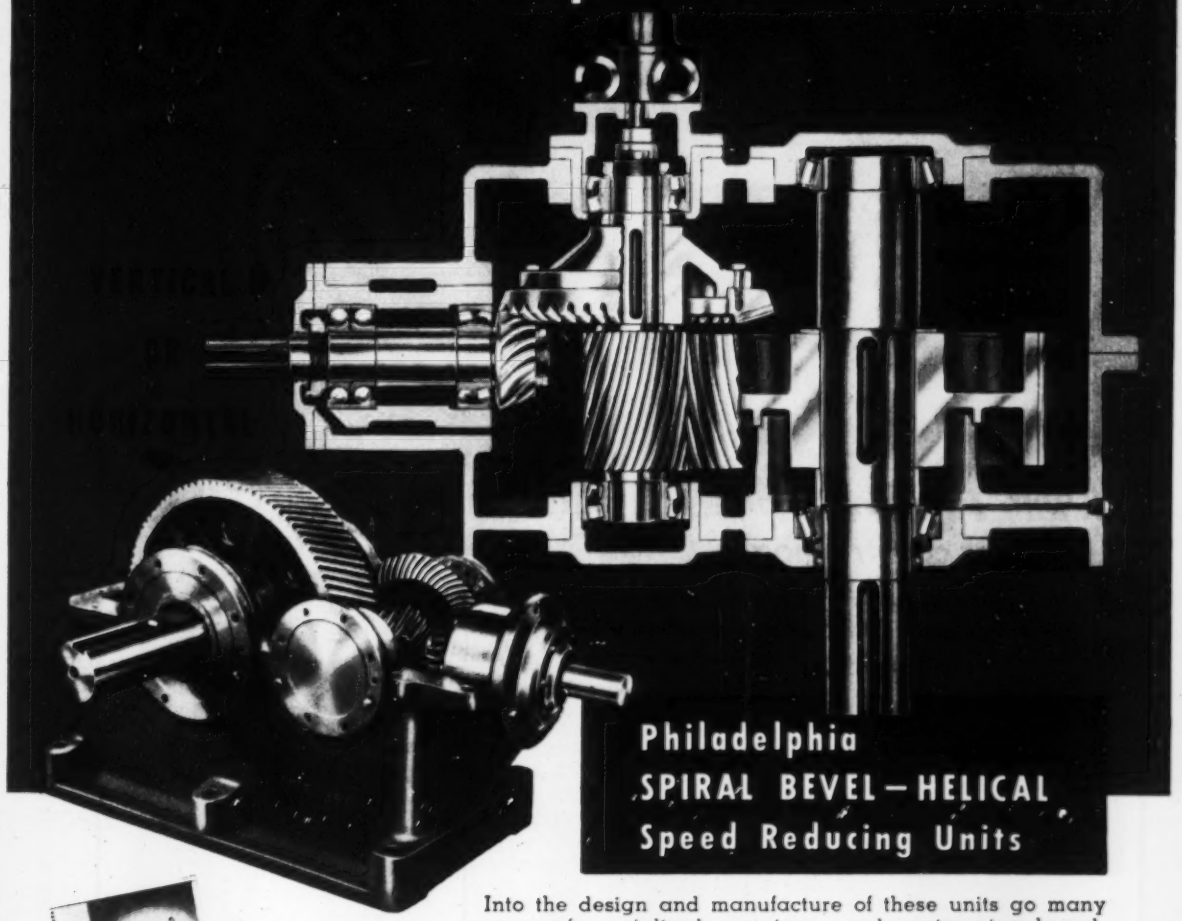
The combination of operations performed by the seeder—conditioning of the seedbed, sowing and rolling—enables one machine to accomplish results that previously required up to three machines or many man-hours of hand labor.

The seeder conditions the soil with a set of closely spaced pulverizer wheels which break up lumps and clods left by tillage. Seeds are dropped between the set of wheels and a trailing roller, which covers the seed uniformly to a ¼-inch depth and firms the soil around the seed. BRILLION IRON WORKS, INC., BRILLION, WISCONSIN.



TWO-COLOR TRIPLE-LINE ROAD MARKER—This highway marking unit is a two-color triple-line striper with 60-gal. capacity for each color. It is also equipped with an automatic electric broken-line mechanism that applies 15 ft and skips 25 ft. The length of this cycle can be regulated in flight to advance or retard the beginnings and endings of the line. An intercom provides communication between the operator and driver. The truck above has been delivered to the North Carolina State Highway & Public Works Commission. Kelly-Creswell Company, Xenia, Ohio.

Definitely designed for dependable service



Philadelphia SPIRAL BEVEL—HELICAL Speed Reducing Units

Available in single, double and triple reductions in standard ratios up to 238 to 1. Send for Catalog SB-50.

Into the design and manufacture of these units go many years of specialized experience and engineering knowledge. From the size and contour of the housings to the proper selection and placement of gears and bearings, greatest care is given to insure economical and reliable transmission of power with minimum maintenance. Indicative of advanced designing is the dry well construction which prevents oil-drip around the output shaft of the vertical unit.

Philadelphia Gear Works, INC.

ERIE AVE. AND G ST., PHILADELPHIA 34, PA.

NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • LYNCHBURG, VA.

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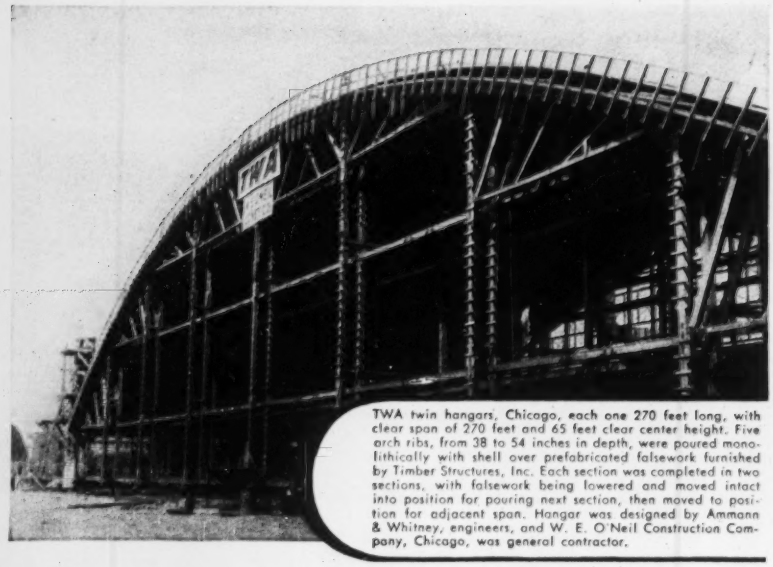
LimiTorque Valve Controls



TWA twin hangars, Chicago, each one 270 feet long, with clear span of 270 feet and 65 feet clear center height. Five arch ribs, from 38 to 54 inches in depth, were poured monolithically with shell over prefabricated falsework furnished by Timber Structures, Inc. Each section was completed in two sections, with falsework being lowered and moved intact into position for pouring next section, then moved to position for adjacent span. Hangar was designed by Ammann & Whitney, engineers, and W. E. O'Neil Construction Company, Chicago, was general contractor.

Mobile Falsework for Precision Pouring

with engineered and prefabricated timber construction

This roof arch form was fabricated to engineering detail to assure rigid support for reinforced concrete ribs and shell. It is typical of the precision work of Timber Structures, Inc., and gave typically effective performance — only two hours were required to move the entire assembly into position for the second pouring, and only half a day to move it intact into the next hangar.

In producing this engineered falsework, Timber Structures, Inc. avails the contractor of the facilities and knowledge of America's largest and most experienced timber laminators and fabricators. This includes the services of a complete engineering staff when desired, together with specialized equipment and trained craftsmen.

Let us show you how this service will speed your jobs and increase your profits. See your Timber Structures representative, or write for informative literature.

TIMBER STRUCTURES, INC.

P. O. BOX 3782-C, PORTLAND 8, OREGON

Offices in New York; Chicago; Detroit; Kansas City; St. Louis; Minneapolis; West Hartford; Dallas; Charlotte; New Orleans; Seattle; Spokane; Eugene

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TIMBER STRUCTURES OF CANADA, LTD. • Peterborough, Ontario

Local Representatives throughout the United States and Canada.

New product briefs

• **Welding machine**—A new 400-amp single phase, a-c welding transformer with a 60% duty cycle has been announced by the General Electric Company, Schenectady 5, N. Y. Designated as G-E Type WK 40K, the new welder provides a current range of 40 to 500 amp, and can be used with a variety of electrode sizes for sheet-metal or heavy industrial work.

According to G-E engineers, the transformer incorporates arc-stabilizing capacitors which make it easier for operators to strike and maintain an arc without popouts. Other advantages claimed for the new welder are longer coil life because of silicone insulation and stepless current control permitting accurate adjustment.

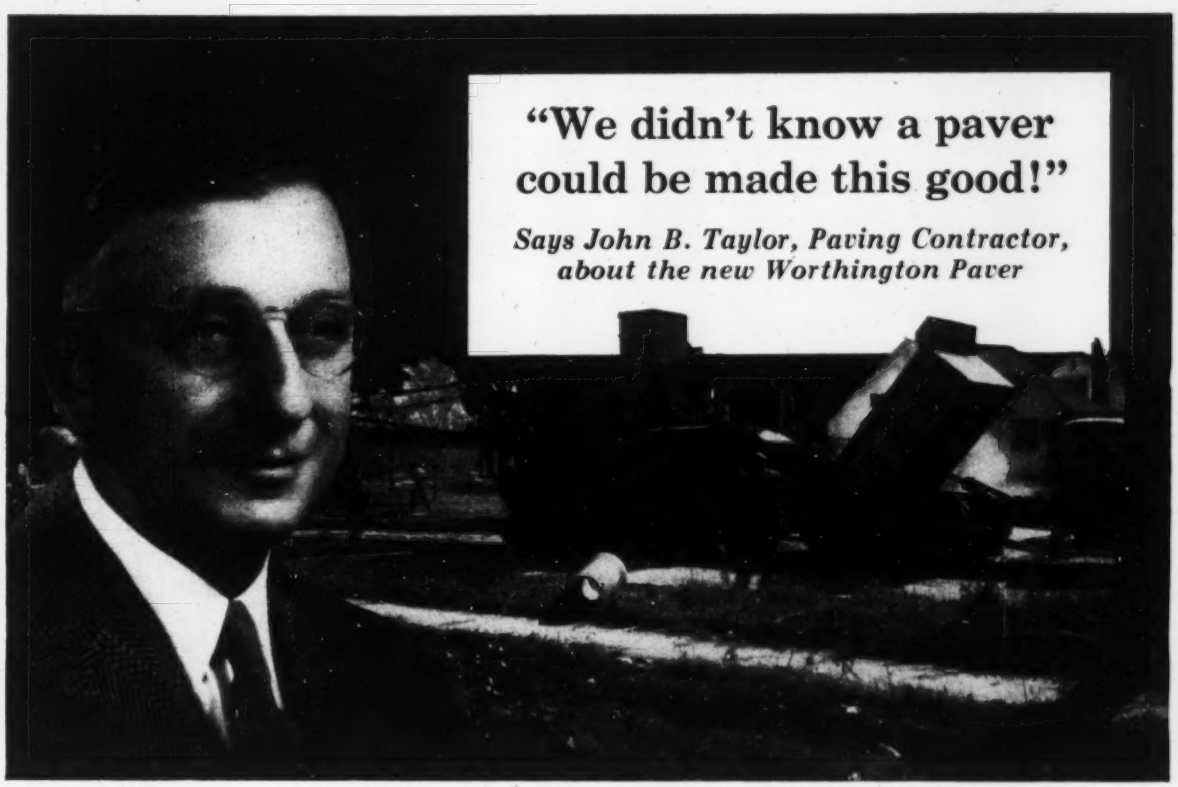
The new welder is 44 in. high, 22⅝ in. in diameter and weighs 355 lb.

• **Anti-rust paints**—Expansion of the line of Rustrem anti-rust paints to include three new colors is announced by Speco, Inc., 7308 Associate Ave., Cleveland 9, Ohio. The paints are now available in red, gray and green, in addition to the standard black, aluminum and clear.

• **Chain saw**—Packing 5 hp into a 29-lb unit, the new Mall 2-mg chain saw manufactured by Mall Tool Company, 7725 South Chicago Avenue, Chicago 19, Ill., is claimed to have more power per pound than any other chain saw.

• **Abrasive thresholds**—Special thresholds that permit easy installation with various types of floor hinges are now available in the line of abrasive cast thresholds made by Wooster Products, Inc., Wooster, Ohio. Additional safety and wear are features claimed for the aluminum oxide grits integrally cast into the surfaces. The thresholds are supplied in aluminum and iron, also bronze and nickel when permitted.

• **Masonry saw**—A 245-lb portable masonry saw, called the Tak-A-Bout, is announced by the Champion Manufacturing Company, 2028 Washington Avenue, St. Louis, Mo. Four models are being produced, one 14-in. and one 12-in. blade capacity model, designed for wet or dry cutting, and two other 14-in. and 12-in. models for dry cutting only. The 14-in. blade capacity models are equipped with a 1½ hp motor, while the 12-in. blade capacity models are furnished with 1 hp motors.



"We didn't know a paver could be made this good!"

Says John B. Taylor, Paving Contractor, about the new Worthington Paver

"SELDOM DO WE ENDORSE ANY CONSTRUCTION EQUIPMENT" begins a letter from John B. Taylor, Taylor Brothers president, pictured here on the job, ". . . but after using the new 34E . . . we feel it our responsibility to write you."

According to its president, John B. Taylor, Taylor Brothers Company, Inc., paving contractors from Birmingham, Michigan, have found that the new Worthington Model WP paver will lay more highway faster and at lower cost than any paver his company knows of.

Says Mr. Taylor: "We thought we knew about your pavers' superiority after using them for 20 years, but this new 34E beats them all."

The Taylor Company has been using its Worthington Dual Drum Paver on a paving job near Dearborn.

The new Worthington paver is the practical result of forty years of experience in building pavers and other construction equipment. Learn how it can help speed *your* paving jobs by writing for Bulletin R-1700-B7 to *Worthington Corporation, formerly Worthington Pump and Machinery Corporation, Construction Equipment Division, Plainfield, New Jersey.*

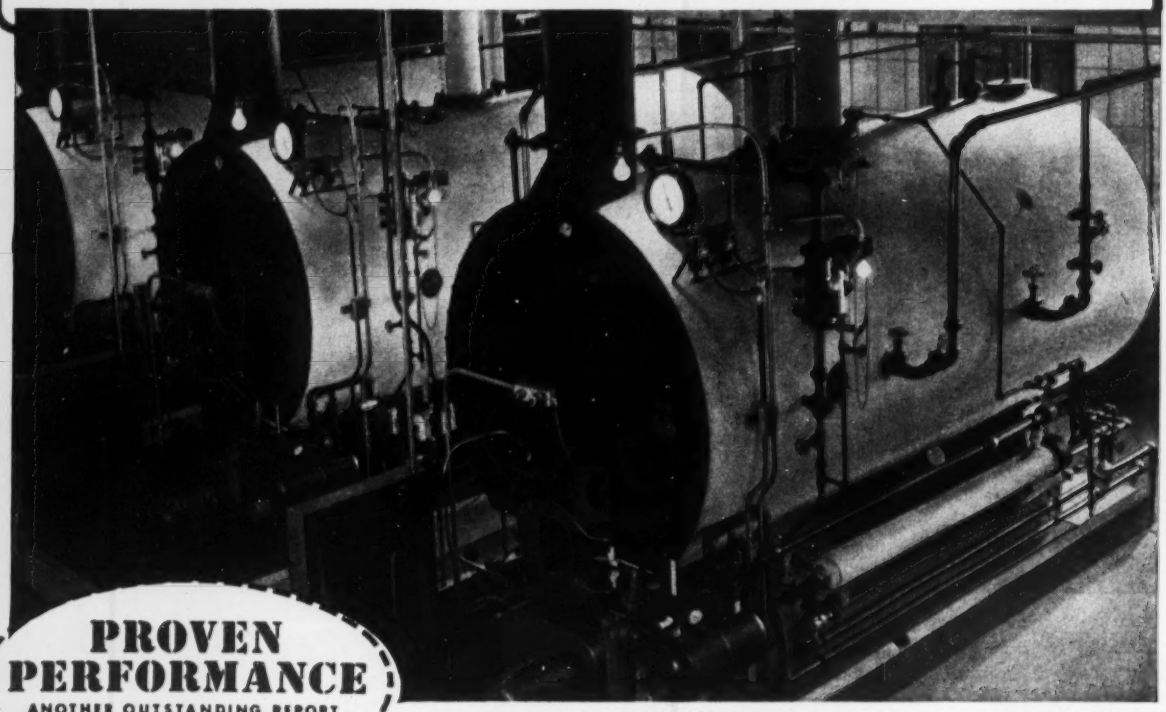
R.2.6

If It's A Construction Job, It's A *BLUE BRUTE* Job

WORTHINGTON

Construction Equipment

Cleaver-Brooks boilers save $25,000 per year for Hoosac Mills...pay for themselves in 2 years' time!



PROVEN PERFORMANCE

ANOTHER OUTSTANDING REPORT FROM A CLEAVER-BROOKS OWNER

After installation and starting service was completed, a check was made on boiler output. Tests indicated efficiency exceeded the guaranteed 80%. After eight months' operation without tube cleaning, stack temperature showed no noticeable gain, indicating high efficiency had been maintained. *Planned and installed by Frank I. Rounds Co., Newton Highland, Mass.*

INSTALLING 3 Cleaver-Brooks self-contained boilers at Hoosac Textile Mills, New Bedford Division, was a major step in ending boiler worries. Hoosac can count on yearly savings of $25,000, and they're set up for future expansion as well.

Before deciding what type of boilers to install for replacing old, hand-fired boilers, Hoosac carefully considered these factors:

1. **Efficiency of steam generation** — the cost for supplying 12,000 lbs. of steam required each hour at peak capacity for heating and processing.
2. **Saving labor costs** — through safe, automatic operation.
3. **Cleanliness** — important to textile manufacture.

A study of past performance and prominence of similar units in the industry — showed that Cleaver-Brooks self-contained boilers would fill the bill.

Guaranteed 80% thermal efficiency was one of many influencing factors in selecting the 3 Cleaver-Brooks 150 hp. boilers. Even with loads as low as 30% of rating, these boilers operate with a flat 80% efficiency. (Hoosac operates their plant over widely fluctuating loads, particularly in summer.)

That they attained their objectives is borne out by these results — *results which showed the boilers paid for themselves in 2 years' time.*

1. **$15,000 savings in fuel** — fuel cost studies showed 275,000 gals. of oil at 5½¢ per gal. provide steam for a year's operation. Same steam formerly required 2,000 long tons of coal at $15.00 per ton.
2. **$10,000 savings in labor costs** — fully automatic operation minimized boiler maintenance. Personnel were then available for productive plant work.
3. **Cleanliness** — modern boiler room proved more efficient than previous cluttered arrangement. Hand firing, removal and disposal of fly-ash was eliminated.

In addition to these substantial savings, the installation provided for economical future plant expansion. At present, boiler operation is rotated so all three periodically receive the same service and maintenance.

Cleaver-Brooks boilers are showing similar savings in many other businesses. Investigate — write for Catalog AD-100 and complete information on standard size oil, gas, combination oil/gas fired Cleaver-Brooks boilers, 15 to 500 hp., 15 to 250 psi.

CLEAVER-BROOKS COMPANY
Dept. D, 343 E. Keefe Ave.,
Milwaukee 12, Wis., U.S.A.

Cleaver-Brooks

ORIGINATORS OF THE SELF-CONTAINED BOILER

Steam Boilers • Oil and Bitumin Tank Car Heaters • Distillation Equipment Oil and Gas Fired Conversion Burners

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EDITORIALS

Re-examine federal power policies

SOUND POLICIES relating to federal activities in the field of power generation were outlined by former President Hoover at the 75th anniversary of the establishment of Case Institute of Technology in Cleveland last week. He would have the government reduce its activities in the field of power generation, get out of power distribution entirely, stop building steam generating stations, and stop building dams that are primarily for power. He also asked for more realistic estimates of the cost of river development projects when they are placed before Congress for approval, and for more equitable allocation of costs of such projects among flood control, navigation and power. Too frequently, Mr. Hoover said, costs that should have been allocated to power have been placed on the general taxpayers by assigning them to flood control or navigation.

It is to be hoped that the Eisenhower administration will give serious thought to Mr. Hoover's proposal that a temporary commission be set up to study this whole subject and make recommendation to Congress as to what future federal power policy should be. A better policy can be evolved in that way than by piecemeal development through amendments to river-and-harbor bills or the flood-control act, or by the negative approach of refusing to appropriate funds for specific projects. What is needed is a new declaration of basic policy and a definition of the steps to be taken to put the policy into effect.

Only the most ardent opponents of public power development still hope to get the federal government out of the power business entirely. What Mr. Hoover seeks is a check on the trend of the last two decades that has put the government deeper and deeper into the fields of power generation and distribution without specific authority from Congress.

You can't keep it quiet!

SOME ENGINEERS try to squelch all publicity when a structure fails, fearing that the news will injure their reputations. They may succeed in keeping the information from the press, but they can't keep some news of the accident from being spread by word of mouth. Rumors, often more damaging to the reputation of the designers and contractors than the real facts, spread rapidly.

Recent weeks have provided a good example of this. When some prestressed concrete pipe failed in Canada because of corrosion of the wire prior to installation, the engineers who had full knowledge of the situation were not willing to volunteer an explanation of the probable cause. It is not surprising that rumors spread. As a result, a failure that should have been blamed on a purely local, unusual and special set of circumstances was interpreted by many engineers as evidence that prestressed concrete pipe is unreliable. Actually, prestressing was not at fault. Probably the trouble was caused by electrolytic action resulting from placing concrete made with two different types of cement on opposite sides of the wires.

Obviously, a journal like ENGINEERING NEWS-RECORD has a selfish interest in advocating that engineers make public at the earliest possible moment the most complete information that is then available about the failure of an engineering structure. Yet experience has shown clearly that what is to our advantage, in making it possible for us to give our readers accurate information at an early date, generally benefits the designers and builders by putting ugly rumors and exaggerated reports at rest.

Competition may pay off

A BY-PRODUCT of the competition between the Bureau of Reclamation and the Idaho Power Co. for authority to develop the power potential of Hells Canyon on the Snake River could be better plans for that project and for the big Mountain Home irrigation project than were put forward initially for these undertakings.

Current plans of the USBR for the Mountain Home project set the cost so high—more than $1,000 per acre—that Congress never would authorize its construction. To make the project more attractive, the bureau proposed subsidizing it with revenue from power developed at the high dam that it also sought authority to build in Hells Canyon. But the Idaho Power Co. also had its eye on that power. It proposed to develop it with five low dams instead of one very large structure.

In opposing that plan, the bureau stressed the fact that these low dams would not provide storage that is needed downstream. Now, the power company has come up with a three-dam proposal plus a plan for bringing water to the Mountain Home irrigation project that cuts the cost per acre to the point where no subsidy from Hells Canyon power will be needed (ENR April 16, p. 25). Under this latter plan there would be no need for the USBR to take over development of power in the canyon to make the irrigation project possible. The power company's three-dam scheme also provides one million acre-feet of storage, or about one-third of that of the high-dam project of the USBR.

Obviously, neither of the new proposals may be as much of an improvement over the original ones as the proponents claim; yet it seems highly probable that in each instance, the end product will be better for having had to meet the challenge of a competitive design. Certainly, from the viewpoint of orderly development of the whole Columbia River Valley, each scheme appears to have been materially improved.

FIELD JOB REPORT

OWNER: Carl Goodwin & Sons, Allegan, Michigan.

PROJECT: Grading and Paving 5½ miles on highway M-140, Watervliet, Michigan.

CONDITIONS: Blue clay...average digging depth, 14 feet.

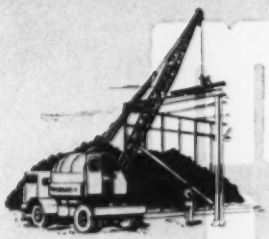
EQUIPMENT: MICHIGAN MODEL C-16 HOE with 31-inch dipper. Powered with GM 2-71 diesel. Crawler pads 30 inches wide.

REMARKS: Wayne Goodwin reports complete satisfaction with his new MICHIGAN C-16 HOE. New gooseneck boom digs down to 18 feet. Real stability is assured with the C-16's 10'-1" wide, 11'-10" long crawler base. The 30-inch wide pads give a ground bearing area of 7,440 square inches.

WRITE FOR BULLETIN 1601 SUP.

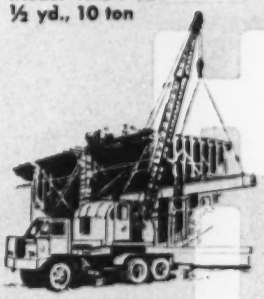
MICHIGAN POWER SHOVEL COMPANY

Benton Harbor, Michigan, U. S. A.



Model T6K
⅜ yd., 6 ton

Model TMDT-16
½ yd., 10 ton



Model TLDT-20
12 ton

Series 8
½ yd., 8 ton

Model C-16
½ yd., 8 ton

Fast reverse speeds eliminate turns—TIMKEN® bearings add dependability

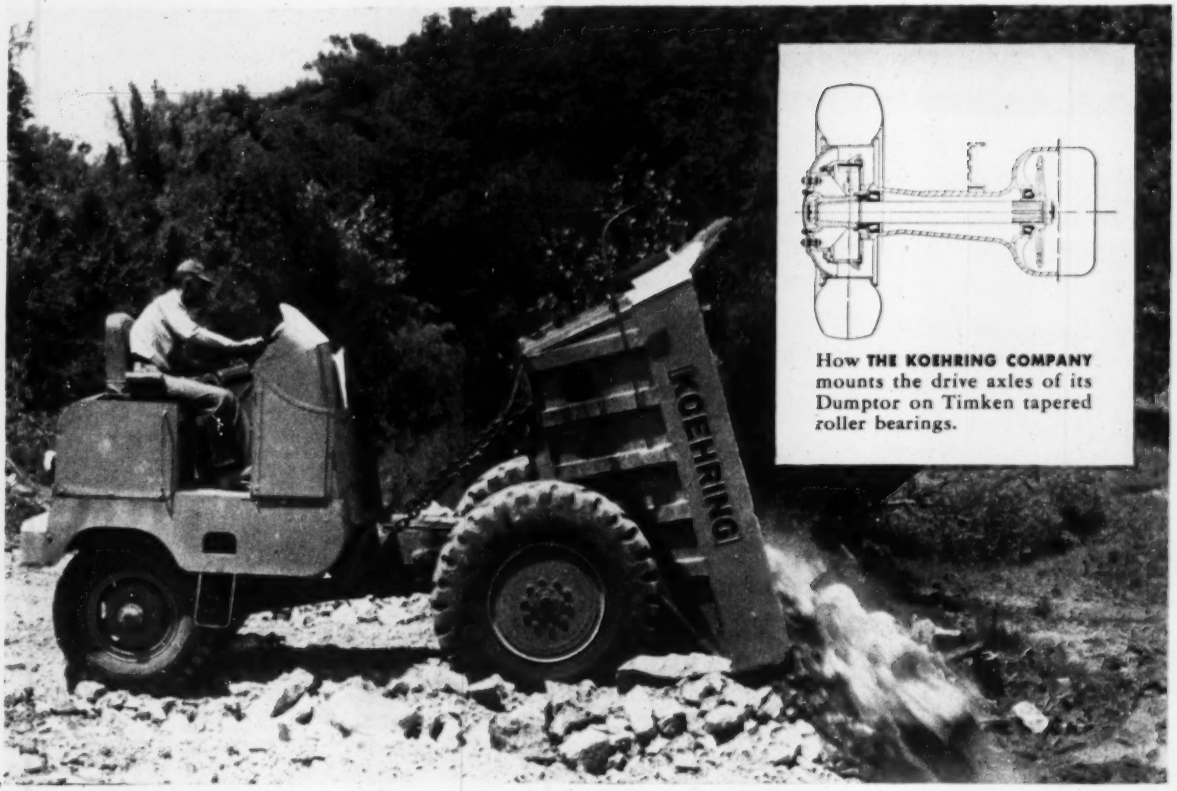
BECAUSE the Koehring Dumptor travels as fast in reverse as it does forward, it eliminates turns on shuttle hauls, saves as much as ½ minute every round trip. To keep it on the job, day after day, with minimum time-out for maintenance and lubrication, Koehring mounts the directional transmission reduction shafts and drive axles on Timken® tapered roller bearings.

Line contact between the rollers and races of Timken bearings provides extra load-carrying capacity. Due to their tapered construction, Timken bearings take both radial and thrust loads in any combination. Shafts are held in proper alignment, gears mesh with accuracy, wear is reduced.

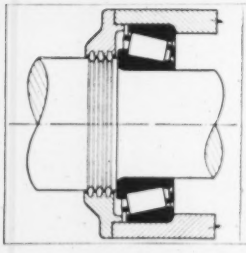
Closures are more effective because Timken bearings keep housings and shafts concentric. Lubricant is kept in—dirt, mud and water are kept out. And friction is practically eliminated due to the incredibly smooth surface finish and true rolling motion of Timken bearings.

No other bearing gives you *all* the advantages you get with Timken tapered roller bearings. Make sure you have them in all the equipment you build or buy. Always look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



How **THE KOEHRING COMPANY** mounts the drive axles of its Dumptor on Timken tapered roller bearings.



LUBRICANT STAYS IN —DIRT KEPT OUT

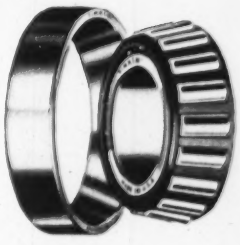
Because Timken bearings hold shafts concentric with housings, closures are made more effective. Lubricant is retained, dirt and moisture kept out.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis Timken steels.

TIMKEN

TRADE MARK REG. U.S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◎ AND THRUST ◎ LOADS OR ANY COMBINATION